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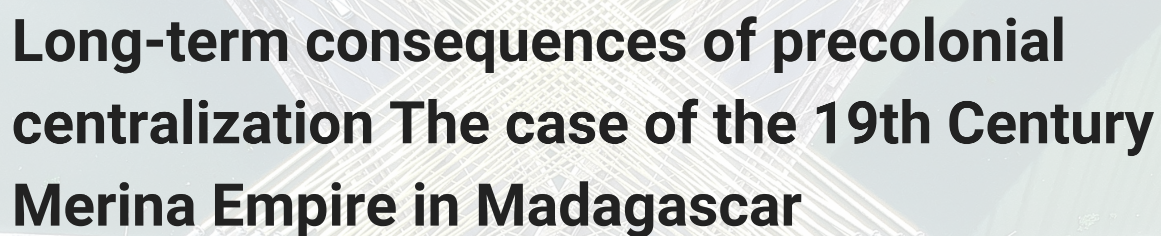

Long-term consequences of precolonial centralization The case of the 19th Century Merina Empire in Madagascar

Frank-Borge Wietzke - Institut Barcelona d'Estudis Internacionals

LSE-Stanford-Universidad de los Andes Conference on Long-Run Development in Latin America, London School of Economics and Political Science, 16-17 May 2018

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The case of the 19th Century Merina Empire in Madagascar

Frank-Borge Wietzke

Institut Barcelona d'Estudis Internacionals, fbwietzke@ibei.org

Paper presented at the LSE - Stanford - Universidad de los Andes Conference on Long-Run Development in Latin America and Beyond,

London, 16-17 May 2018

Recent improvements in the availability of information about Africa's precolonial institutions have generated renewed interest in historical state building processes in the continent. However, much of this literature only studies long-term legacies of precolonial centralization within individual ethnic groups. This paper argues that this relatively narrow focus not only omits interactions and political complexities across group lines. It is also at odds with state building literature in other world regions, which typically regards the formation of larger territorial units that cut across ethnic and social boundaries as the primary historical process of interest. The paper illustrates differences between historical state building within and across group lines in the context of the 19th century precolonial Merina Empire in Madagascar. I document significant differences between measures that only consider political centralization within ethnic groups and alternative information that takes into account local mechanisms of territorial control imposed by the Merina state. The paper also shows that state building across group lines had significant and robust effects on contemporary ethnic relations and customary institutions.

1. Introduction

Analysts have long focused on the colonial period to explain the poor development performance of contemporary states in Africa (Mamdani, 1996, Acemoglu, Johnson and Robinson, 2002; Lange, 2009). However, recent literature has increasingly turned to Africa's precolonial past. Beginning with Gennaioli and Rainer (2007) a number of studies have linked insufficient provision of public goods and poor development outcomes in the continent to relatively low levels of complexity among Africa's precolonial institutions. Recent examples include Michalopoulos and Papaioannou (2013), who use information about political centralization at the ethnic group level to predict current economic activity (measured by night light intensity), as well as Bandyopadhyay and Green (2016) and Wig (2016), who, respectively, focus on variation in private wealth and conflict risk as the main outcome of interest. Much of this work has been made possible by George Peter Murdock's (1967) *Ethnographic Atlas,* which provides detailed information about the extent of political centralization above the community level for over 840 groups and tribal areas. Following the digitization of the Atlas by Nathan Nunn,[1] information about ethnicity-specific institutions is now regularly used in the type of quantitative analysis of subnational outcomes that has come to dominate recent literature about the institutional origins of development (see e.g. Alesina et al., 2013; Fenske, 2013; Giuliano and Nunn, 2013; Osafo-Kwako and Robinson, 2013; Boix, 2015; Alsan, 2016; Dell et al., 2017).

This paper argues that the focus on precolonial institutions as reported in Murdock's atlas can be misleading for two interrelated reasons. First, the purpose of Murdock's atlas was to facilitate analysis of interactions between social and institutional processes within culturally and linguistically distinct groups; but not to estimate variation in institutional outcomes between groups that share –or compete in- similar geographic and historical contexts. Part of a now largely defunct evolutionary tradition in anthropology, Murdock primarily wanted to promote the rigorous testing of hypotheses about the functional coherence of different social, demographic and political traits within well-defined cultural

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1 http://scholar.harvard.edu/files/nunn/files/ethnographic_atlas_fixed.dta_.zip, last accessed April 2018.

systems (Murdock, 1967; White and Brudner-White, 1988). Within this context his primary concern was with statistical problems caused by the possible interdependence between cases ('Galton's problem'); which led him to deliberately exclude information about wider political complexities and interactions across group lines. Uncritical use of the atlas, therefore, can lead researchers to unwillingly omit information about broader historical processes, such as colonial conquests or inter-group conflicts that could be relevant for the explanation of contemporary differences in the wellbeing and political status of groups in the same geographic vicinity.

Second, in so far as institutional data in Murdock's atlas are taken as a proxy for wider state building processes in Africa, the focus on political centralization only within ethnic groups is at odds with much of the wider literature about state- and nation-building in other world regions. In the most influential contributions to this literature, such as Tilly's (1990) *Coercion, Capital, and European States* and Mann's (2012) *The Sources of Social Power*, the historical process of primary interest is typically the unification of disparate kingdoms and ethnic fiefdoms into more complex territorial units and societies, not the isolated institutional traditions and trajectories of more localized groups and communities (see also Toennies, 2001; Skocpol, 1979). Although modern state-like structures developed less frequently and at a later stage in Africa than in other world regions, there is evidence that territorial wars and conquests waged by larger African kingdoms had important consequences for contemporary political outcomes and group relations in the continent (Radcliffe-Brown, 1940; Acemoglu and Robinson, 2010; Besley and Reynal-Querol, 2014; Michalopoulos and Papaioannou, 2015).[2] Again, the non-consideration of these more complex processes of indigenous state formation can be an important omission in the analysis of contemporary development outcomes in Africa.

The paper illustrates differences between historical state building processes within and across group lines against the background of the 19th century Merina Empire of

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[2] Africa's precolonial history has produced several multi-ethnic Empires and kingdoms of relevance in this context, such as the kingdoms of the Zulu, Monomotapa, Lozi, Malawi, Kilwa, Lunda, Congo, Luba, Rwanda, Buganda, Ashanti, Yoruba, Ethiopia, Axum, Wolof, Ghana, Mali, Kush, Songhay, Kanem, as well as Classical Egypt and Carthage, each of which covered large territories and multiple ethnic groups (see for instance, Fortes and Evans-Pritchard, 1940; Herbst, 2000; Thornton, 2001; Wimmer and Min, 2006; Green, 2010; Besley and Reynal-Querol, 2014; Lowes et al., n.d).

Madagascar. The Merina had emerged from relative obscurity in the late 18th century and went on to build one of the most sophisticated states in precolonial Africa (Deschamps, 1960; Heseltine, 1971; Brown, 1995). During the historical time period covered by this paper (1820-1896), the Merina expanded their sphere of influence to about two thirds of the island, incorporating a territory of approximately the size of modern-day Germany that was home to at least 15 different ethnic groups. Because of the presence of European travelers and missionaries in the island at the time, the political organization of the Merina Empire at the local level is unusually well documented. For the present analysis I am able to distinguish between four modalities of local Merina territorial control, including direct military occupation, two variants of indirect rule that resemble the type of governance systems often used later by European colonial powers in Africa, and full independence (Deschamps, 1960).

The paper's empirical strategy is divided into a descriptive and an econometric part. The descriptive part contrasts information about systems of political authority within ethnic groups as reported by Murdock's atlas with the systems of political control imposed on top of these structures by the Merina state. Although data from Murdock's atlas are only available for a sub-sample of ethnic groups in Madagascar, this comparison reveals significant differences in the effective levels of political centralization experienced by local populations at the time. For example, some populations in the east coast of Madagascar that are classified as highly decentralized by Murdock actually lived under the most intense form of centralized administration by the Merina state. In the west coast effective levels of centralized control under the Merina Empire differed significantly within groups.

The econometric part extends the analysis by endogenizing the strength of contemporary ethnicity-specific customary institutions within past experiences of Merina rule. Using data from a unique nationwide institutional mapping exercise in over 1200 municipalities, I am able to show that the prevalence of local traditional authorities, such as healers, diviners, or traditional leaders, increases considerably with the intensity of Merina control in the past. These effects hold across a range of econometric specifications, data sets, and robustness tests that account for possible unobserved locality- and group-specific influences.

My primary explanation for this finding emphasizes social-psychological responses to the experience of Merina colonialism. Building on prior ethnographic research from different ethnic groups and regions in Madagascar, I argue that groups that lost their autonomy to 'foreign' Merina occupiers turned inwards to local tradition and ancestral beliefs to protect their social identity (Feeley-Harnick, 1984; Cole, 1998; Cole and Middleton, 2000). To explain why these effects persisted over time, I also present descriptive evidence that suggests that extractive political and economic institutions that were created under Merina rule persisted for much of the colonial and post-independence period.

The paper makes a number of contributions to the broader debate about indigenous state formation and modern state capacity in Africa. First, the focus on customary authorities as the primary outcome variable enables me to create a link to the large literature on state capacity within 'neopatrimonial' or 'hybrid' governance systems in Africa.[3] Within this context, the findings suggest that state building under conditions of autocracy weakened, not strengthened, contemporary state capacity (such as by deepening ethnic divides and identities, see Acemoglu and Robinson, 2010; Besley and Reynal-Querol, 2014; Dinecco et al. 2017). This result contradicts a positive association between past political centralization and contemporary development that is often made in recent literature about precolonial state building in Africa (see e.g. Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013).

My findings also speak against a tendency to treat contemporary customary institutions at the ethnic group level as deeply rooted in local tradition (Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013) or as functional responses to local geographic and agricultural conditions (Alesina et al., 2013; Fenske, 2013; Osafo-Kwako and Robinson, 2013; Alsan, 2016). Instead, by endogenizing current manifestations of traditional authority in past experiences of Merina conquest, my results create a link to much larger alternative traditions in political science and anthropology that explain contemporary ethnic institutions and relations as the outcome of historical interactions

[3] Much of this literature considers the local presence of traditional authorities as an indication of the weak implantation of modern state institutions in the continent (see for instance, Bayart, 1993; Mamdani, 1996; Bierschenk and De Sardan, 1997; Herbst, 2000; Bates, 2008; Kraushaar and Lambach, 2009).

between groups, including through means of precolonial warfare, extraction and state building (see for instance Fortes and Evans-Pritchard, 1940; Barth, 1969; Cederman et al., 2010; Singh and vom Hau, 2016).

The paper proceeds as follows. The next section discusses in more detail why Murdock's atlas omits important information about higher-level political complexities and the problems that arise from this. Section 3 describes the country context and the expansion of the Merina Empire. Section 4 illustrates differences between Murdock's measures of group-specific institutions and the effective levels of centralization imposed under the Merina state. Section 5 discusses effects of Merina occupation on contemporary ethnic institutions, followed by results of the econometric analysis and robustness tests. Section 6 discusses wider contributions of the paper and the generalizability of my results beyond Madagascar.

2. What explains institutional differences between ethnic groups?

A key finding of this paper is that the coding of ethnicity-specific precolonial institutions in the Murdock atlas differs significantly from alternative perspectives that also take into account broader political processes above the ethnic group level. But why did Murdock not consider more complex political systems? His own writing suggests that the primary reason was methodological. By Murdock's own account his overall goal was to replace the grand evolutionary theories that dominated anthropological literature of his time with empirically grounded shorter-range theories. This was to be achieved through rigorous testing of competing hypotheses about the interaction of various social, demographic, and environmental variables in the evolution of group-specific cultures and social systems. Within this context the primary challenge faced by Murdock was posed by 'Galton's problem' – the difficulty of making inferences across observations that are not culturally independent. The ethnographic atlas (and the better-known standard cross-cultural sample, see Murdock and White, 1969) was designed to deal with this challenge, by developing a sampling universe of ethnic cultures from which cases could be randomly selected for further statistical and comparative analysis (Murdock, 1967:114). By contrast, to not

jeopardize the independence of cases, interactions and influences across group lines were to be minimized or excluded to the extent possible. This was achieved by categorizing geographically and linguistically similar groups into culturally distinct clusters and by omitting information about broader political structures, such as colonial states (Murdock, 1967; White and Brudner-White, 1988; Michalopoulos and Papaioannou, 2013). Moreover, Murdock explicitly discouraged the inclusion of geographically adjacent or culturally related groups in the same sample:

> *"No world sample should include any two societies so close to one another that diffusion is likely to have jeopardized the essential independence of their cultures"* (Murdock, 1967: 112, emphasis in original).

Murdock's own instructions raise questions about a growing tendency to use the full sample of the ethnographic atlas for sub-national studies of the geographic and institutional origins of local development outcomes, without at least appropriate adjustments for spatial or other forms of local autocorrelation. In addition, the atlas' lack of information about broader political structures above the group level poses problems for dealing with more complex social and political interactions that have come to be the primary focus of more recent literature about ethnic relations and polarization. In anthropology, approaches that have started to dominate the field after the more formalist tradition represented by Murdock have long emphasized the importance of group interactions in the analysis of ethnic traditions and identities. For instance, Fredrik Barth's (1969) highly influential '*Ethnic Groups and Boundaries'* has noted that

> "ethnic distinctions do not depend on an absence of social interaction and acceptance, but are quite to the contrary often the very foundations on which embracing social systems are built' (Barth, 1969:10).

Interactions and political complexities across group lines are also of particular interest to recent scholarship about ethnic politics in Africa. A growing part of this literature recognizes the need to move beyond earlier perspectives that treated current ethnic differences as essentially exogenous and to account instead for the possibility that

group identities and status relations are shaped by past group interactions and historical state interventions (see for instance Horowitz, 1985; Englebert, 2000; Fearon and Laitin, 2000; Wimmer, and Min, 2006; Cederman et al. 2010; Green, 2010; Singh and vom Hau, 2016).

The literature that this study is most closely related to tries to provide systematic quantitative support for the effect of these historical processes. In Africa, Besley and Reynal-Querol (2014) use historical conflict data to show that precolonial territorial conquests are important predictors of the strength of self-reported ethnic identities, trust, and conflict today. Michalopoulos and Papaioannou (2015) compare information about centralization in larger precolonial kingdoms with Murdock's group-specific data and find a stronger effect of the former on economic development (night light density). Depetris-Chauvin (2015) constructs a measure of state antiquity at sub-national level and finds that regions with longer histories of precolonial statehood have lower conflict risks today and higher levels of trust in modern and traditional leaders. Bandyopadhyay and Green (2016) show for Uganda that groups with more complex political systems in the past have higher living standards today, but that the likelihood of precolonial centralization decreased with a group's distance to larger precolonial kingdoms (see also Herbst, 2000).

Where the transmission mechanisms behind these effects are concerned this study relates to literature about psychological and institutional consequences of past violence and conflict. Work by Nunn and Wantchekon (2011) on the precolonial African slave trade, and Garcia-Ponce and Wantchekon (2011, 2015) on the consequences of colonial independence struggles, suggests that effects of past conflicts are passed on over time through changes in local levels of trust and political behaviors at the group level. These findings are consistent with a larger literature about the psychological and political consequences of conflict for other time periods and world regions (see e.g. Acemoglu, et al., 2011; Rohner et al. 2013; Fouka and Voth, 2016).

In the context of precolonial state building, these effects were often exacerbated by the absolutist and authoritarian style of government that dominated in most of Africa's larger precolonial kingdoms. For instance, Acemoglu and Robinson (2010) and recently Dinecco et al. (2016) have argued that the exclusionary nature of governance in multi-

ethnic empires such as the Kingdom of Ethiopia are one of the primary factors that undermined ethnic cohesion and the stability of future state systems in the continent.

My analysis below suggests that this is also the case in Madagascar, where an essentially extractive model of colonialism by the Merina state laid the foundations for lasting patterns of ethnic polarization and very uneven power relations between groups. As will become clear, the failure to create more inclusive systems of government with meaningful opportunities for political participation by conquered groups emerges as one of the primary reasons why other often-noted correlates of historical state formation, such as political centralization, warfare, and taxation that existed in precolonial Madagascar had weaker or less consistent effects on contemporary customary institutions and state performance than in other world regions (Fortes and Evans-Pritchard, 1940; McIntosh, 1999; Osafo-Kwaako and Robinson, 2013; Dincecco et al., 2016).

3. Country context

Madagascar provides a good setting to study the long-term consequences of precolonial centralization. Even though the island was under French colonial control for over 6 decades (1896 to 1960), the French system of indirect rule left traditional institutions largely intact and even incorporated them into the colonial judicial system (Blanc-Jouvan, 1964; Massiot, 1971). To this day, customary authorities are recognized in important legal areas such as forestry and decentralization law (Vaillancourt, 2008; Kull, 2014) and they frequently coexist with modern governance institutions at the local level (Vaillancourt, 2008; Wietzke, 2017).

As an island with only one modern state on its territory, Madagascar was also not subjected to the arbitrary colonial border design that often led to significant upheavals in ethnic relations in other parts of the continent (Englebert, 2000; Michalopoulos and Papaioannou, 2016). Despite this, there is considerable diversity in ethnic identities and traditions. At the time of French conquest there were over 18 ethnic groups. While these

shared common linguistic foundations they were often divided by deep differences in their cultural identities and political institutions.[4]

Map 1: Ethnic boundaries in the early colonial period

Jurisdictional hierarchies above the community level

- One level
- Two levels
- Three levels
- No data

Source: Deschamps 1960:294 and Murdock 1967

Map 1 combines territorial boundaries of the island's major ethnic groups as reported by historians at the onset of the colonial period with information about group-specific political institutions as coded by Murdock's atlas. The primary measure used from the atlas is the widely-cited 'Jurisdictional Hierarchy beyond the Local Community Level"

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[4] For example, the Merina, the group of most interest to this paper, are believed to be of Polynesian origin, with first settlements in Madagascar traced back to between 300 and 500 AD. By contrast, populations in coastal areas descend mostly from immigrants from mainland Africa and the Arab world (see Brown, 1995:18f).

index. This index describes the number of hierarchical political levels above the village or community on an ordinal variable with four steps (Map 1). A score of 1 describes petty chiefdoms; a score of 2 describes paramount chiefdoms; and scores of 3 and 4 indicate groups that were part of larger states (Gennaioli and Rainer, 2007; Michalopoulos and Papaioannou, 2013).

Although data from Murdock's atlas are missing for large parts of the east coast and the south of Madagascar,[5] there are signs of differences between ethnicities that would be consistent with the popular idea that group-specific systems of political authority developed in close interaction with local geographic conditions (Alesina, 2013; Fenske, 2013; Alsan, 2016). In particular governance structures of groups in the arid and remote south (Antandroy and Antanosy) and the tropical and relatively inaccessible east coast (Antanala , Bezanozano) are classified as strongly decentralized Other groups in the east coast and the rugged southern highlands, like the Betsimisaraka and Betsileo that are not included in Murdock's atlas, are also often described as very decentralized (Deschamps, 1960; Brown, 1995; Cole, 1998).

However, there are exceptions. For instance, the Sakalava in the west of Madagascar occupied vast and thinly populated territories that are hard to control through conventional means of direct territorial control. Yet, they developed relatively centralized institutions and even dominated sizeable parts of the island during the 17th and 18th century (Brown, 1995).

The Merina constitute, in many ways, another exception. Concentrated in the rugged central highlands the group was initially fragmented into multiple fiefdoms and smaller kingdoms (Brown 1995:98ff). Full consolidation of the kingdom only occurred under the reign of King Andrianampoinimerina between 1787 and 1810. While the early stages of Merina state formation could be described as an adaptation to local geographic and agricultural conditions such as under Wittfogel's (1957) influential theory of 'hydraulic despotism' –the Merina developed a complex system of irrigated rice cultivation and an effective bureaucracy to carry out supporting public works– other observers, like Jared

[5] Closer inspection of the availability of information in other parts of Africa suggests that these data gaps are not unusual. Data limitations are even more severe in northern, eastern and southern Africa (see Map A1, Annex).

Diamond (1997) have noted that large irrigation schemes preceded the consolidation of the Merina Empire. Historical literature for Madagascar also argue that the link between local farming practices and Merina state formation is at best indirect, with technological change and population growth as the primary mediating mechanisms (Berg, 1981; Brown, 1995; Campbell, 2005).

Expansion of the Merina kingdom

The expansion of the Merina Empire had several features that make it a particularly interesting case of early state building processes in Africa. Contrary to the well-known claim that precolonial states in Africa were typically more concerned with the establishment of control over people than territory (see for instance Herbst, 2000), Merina rulers had a keen interest in conquering land. Andrianampoinimerina reportedly instructed his heir Radama I on his deathbed to expand the kingdom's reach from the central highland to the coastal regions:

> "Imerina has been gathered into one, but behold the sea is the border of my rice fields, O Radama" (quoted in Brown, 1995: 110).[6]

Whether out of respect for his father or out of his own conviction, Radama heeded this order and initiated a campaign of rapid military and diplomatic conquest. Within his relatively short reign (1810 to 1828), the kingdom's reach expanded from the central highlands to almost two thirds of the island. Control over conquered territories was then consolidated through repeated military campaigns and diplomatic alliances under subsequent Merina rulers (Deschamps, 1960; Brown, 1995).

It is important to note that the speed with which the Merina were able to conquer other groups was not unrelated to local geography and pre-existing institutional conditions. For example, the relatively decentralized and fragmented kingdoms of the Betsileo in the southern highlands and the Betsimisaraka and Bezanozano in the east were not able to put up much resistance and were subjugated quickly by invading Merina forces (Deschamps,

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6 The term Imerina refers to the Merina-dominated central highlands.

1960; Cole, 1998). By contrast, Merina control was more uneven in the west, where the better organized Sakalava ethnic group represented a more formidable opponent.

Despite these local influences, any explanation of the timing and organization of Merina conquests would remain incomplete without considering Madagascar's wider geo-political environment in the early 19th century. In particular Radama I's accession to power coincided with a sharp increase in British influence in the region. Madagascar at the time served as a vibrant center of the East African and Indian Ocean slave trade, which provided slaves and supplies for the expanding plantation economy of the nearby French colony of *La Réunion* and other Indian Ocean destinations (Campbell, 2005).[7] Although it never sought direct control of Madagascar, Britain actively promoted the end of slave exports from Madagascar after the passing of the anti-slavery act of 1807. British efforts culminated in two Anglo-Merina treaties of 1817 and 1820, which committed the Merina kingdom to halt the export of slaves, in return for British recognition of Radama as the sole ruler of the island and financial and military support. Arms and British military advisers were dispatched from Mauritius to modernize the Merina army and to put in place a new tax system to support military expansion. In addition, the Merina benefited from the arrival of Anglican missionaries, who initiated a number of legal and social reforms. Key achievements included the codification of Merina laws and the creation of a modern school system, which, after the arrival of other missionary groups, enrolled over 160.000 students by the end of the 19th century (Deschamps, 1960:220; Hugon, 1980; Koerner, 1999). Missionary education laid the foundations for lasting inequalities between highland and coastal populations, as the school system primarily benefited the Merina heartlands and Betsileo territories in the southern highlands, where climatic conditions were more favorable to European missionaries (Wietzke, 2014).

In the following I treat Merina conquests primarily as an exogenous shock to local institutions. This is also supported by the way British involvement in Madagascar influenced Merina choices when and where to invade. Committed to halt the export of slaves and faced with constant attempts by French and Creole traders to evade restrictions imposed by the Merina, Radama's attention initially focused on the east coast, to gain

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7 Significant numbers of slaves were also exported to Mauritius, prior to the British Anti-slavery act. African slaves were also imported to Madagascar for domestic use.

control over the main trading routes to nearby Réunion and Mauritius. When the slave trade shifted to independent west coast ports, Merina military campaigns were directed towards these parts of the island as well (Campbell, 2005).

4. Comparing systems of Merina territorial control with data in Murdock's atlas

Fortunately for this paper, the strong involvement of Europeans in 19th century Madagascar means that the systems of local territorial control imposed by the Merina are relatively well documented. Map 2 outlines different modalities of local Merina rule, based on cartographic and descriptive information compiled by the French historian and former colonial officer Hubert Deschamps (1960:199). From these sources it is possible to distinguish between four types of local Merina territorial control:

- **Direct Merina rule**, marked on the map by straight diagonal lines, was executed through a combination of regular military expeditions and a network of permanent military garrisons and local Merina governors. This system was imposed primarily among the Betsileo in the southern highlands, as well as in the east coast and along the route from the central highlands to the west coast port of Mahajunga – the two regions of primary importance for the export of slaves and other goods from Madagascar (see above).
- **Indirect rule,** marked by straight horizontal lines, was implemented through local kings and chiefs who had sworn fealty to Merina rulers but retained some control over the management of local affairs. Nonetheless, Merina governors were installed in nearby military garrisons and could employ military force and arbitrate in local conflicts when necessary. This system dominated among the Sakalava in the thinly populated western lowlands, the north-west, and in more remote southern stretches of the east coast (Brown, 1995: 128).
- **Theoretically sovereign territories,** (gray checkered areas) were governed through a similar system of indirect rule as described above, but without permanent presence by Merina governors or military outposts. This system dominated in less densely populated and strategically less important inland areas in the north and the south-west of the island.

- **Independent territories** were areas never under permanent influence by the Merina. This included regions in the remote western and southern extremes of the island, marked as blank on the map.

Map 3 combines local modalities of Merina control with Murdock's index of group-specific jurisdictional hierarchies. The comparison illustrates how conclusions about the extent of precolonial centralization differ, depending on whether institutional hierarchies are only considered within groups, as reported in Murdock's atlas, or whether additional structures imposed by the Merina state on top of local institutions are also taken into account.

In particular groups in the east coast who are classified by Murdock as having fewer levels of political hierarchy (light blue, one level) were effectively exposed to a relatively high degree of centralization under the systems of direct and indirect rule imposed by the Merina state. The same goes for the Betsimisaraka in the east coast and the Betsileo in the southern highlands, who were under direct Merina control but are typically described as very decentralized (see above). The Sakalava ethnic group in the west is classified by Murdock at the same level of precolonial centralization as the Merina. However, within this group local systems of territorial control imposed by the Merina also varied considerably, with all three modalities of Merina rule present within the Sakalava's traditional homelands. Robustness tests reported below suggest that these differences in local Merina rule had direct effects on contemporary institutional outcomes, even when group-specific histories and traditions of the Sakalava people are held constant.

Also in qualitative terms the comparison points to important differences in the way the populations would have experienced local structures of political control. The literature about group-specific precolonial institutions has often painted a very positive image of centralized systems of authority in politically more complex ethnic groups. For instance, Gennaioli and Rainer (2007) and Michalopoulos and Papaioannou (2013:3) argue that local chiefs in centralized societies traditionally had a higher degree of accountability "as poorly-performing local rulers could be replaced by the king, superior administrators" or contemporary tribal assemblies.

This relatively romantic view of precolonial centralization does not coincide at all with how historians describe local realities under the system of Merina rule. Despite its many modern features, the Merina state followed the same essentially absolutist style of government common among other precolonial empires in Africa (Acemoglu and Robinson, 2010). This system did not allow for meaningful political participation of conquered groups, and it often relied on extensive rent extraction in occupied territories. A French traveler in the east coast in 1863 described the situation in directly-Merina controlled territories in particularly bleak terms:

> "The population of the northeast coast may not conduct any trade with foreigners without the accord of the commander of the entire coast...[I]n the majority of cases he conducts trade on his own account, purchasing at a cheap price from the locals and selling at a very high profit. It is only when a village chief, through giving the commander presents, has gained his favor, that he is authorized to sell his cattle and rice on the same terms as his superior. Commerce is totally in the hands of the [imperial] Merina governors and officers" (Coignet 1863, quoted in Campbell 2005: 165).

In a similar vein, the anthropologist Jennifer Cole (1998:612f) notes the high burden imposed by forced labor and taxation on the Betsimisaraka in the east coast:

> "Betsimisaraka were couriers for royal packages on the route from the coast up to the capital of Antananarivo ... During certain seasons, those who served the corvee had barely enough time to return home before they were commanded to carry yet more goods. Months were lost carrying packages for the Queen, working for the upkeep of her forts, or cutting trees—trees that Betsimisaraka were forbidden to fell for their own use. The forced labor was accompanied by heavy taxation".

I argue in the next section that these experiences of Merina colonialism had lasting effects on relations between the Merina and other groups, as well as on ethnicity-specific systems of customary authority in formerly conquered territories.

Map 2: Types of Merina control

MADAGASCAR
en 1894

Merina heartlands
Direct Merina rule
Indirect Merina rule
Theoretically sovereign
Independent

Source: Deschamps, 1960:199.

Map 3: Types of Merina control and Murdock's Map

One level of political authority
Two levels of political authority
Three levels of political authority

Source: Deschamps, 1960:199; Murdock, 1967.

Map 4: Types of Merina control and prevalence of customary authority today

Customary authority in community
No customary authority
No data

Source: Deschamps, 1960:199 and Cornell / FOFIA agricultural census.

5. Impacts of Merina conquest on contemporary customary institutions

Differences between ethnicity-specific and cross-ethnic measures of precolonial centralization do not only matter for the description of local realities in the past. They also influence predictions about the strength of customary institutions today.

The literature about group-specific precolonial institutions that comes out of Murdock's atlas often suggests that traditional authorities were more persistent in areas with more developed precolonial institutions. The proposed transmission mechanisms is typically embedded in a postulated positive relationship between a group's past level of political development and its socio-economic wellbeing today. For example, Gennaioli and Rainer (2007) have argued that groups with more centralized institutions in the past do better today because their leaders were more skillful in negotiating public investments and services within the centralized and hierarchical command lines imposed by colonial and postcolonial state institutions. This would suggest that customary authorities in these groups still enjoy higher levels of local popular legitimacy today (see also Logan, 2013; Baldwin, 2015; Michalopoulos and Papaioannou, 2015b).

In practice, evidence about the link from historical centralization to the strength of customary institutions today is mixed. Using data from Uganda, Bandyopadhyay and Green (2016) have questioned whether the transmission mechanism from precolonial institutions to contemporary group-level outcomes works through variation in the provision of public goods as postulated by Gennaioli and Rainer (2007). They only find a positive effect of precolonial centralization on wealth in private, not public, assets. The claim that customary authorities today are strongest in areas that receive more public services is also at odds with anecdotal evidence and literature about the legacies of indirect rule in Africa, which suggests that customary institutions are usually strongest in more remote and backward regions that are harder to control by central authorities (Mamdani, 1996; Herbst, 2000).

In the context of ethnically very polarized societies like Madagascar, a more promising starting point is the extent to which different groups are able to access and control state resources. As the politically and economically most advanced group at the time of the introduction of a modern state bureaucracy under French rule, the Merina were able to protect their social and economic advantages for most of the colonial and postcolonial period (Stifel et. al., 2010; Wietzke, 2014). For example, despite its relatively

isolated location in the central highlands, the traditional seat of the Merina court, Antananarivo, is still the political capital and economic center of the island. Ethnic Merina also dominated the lower ranks of the French colonial service and they are over-represented in the country's current administrative and political institutions to this day ((Brown, 1995; Marcus and Ratsimbaharison, 2005). For the Merina this removed the need to turn inward to their traditional leaders and customs to mediate between communities and the state: State institutions and resources could just be captured directly.

For other ethnic groups these opportunities did not exist in the same way. The historical eye-witness accounts cited above illustrate the very coercive nature of Merina rule in conquered territories. For these groups customary institutions and traditions should have been much more important to protect local identities and negotiate interactions with the outside world. Ethnographic reports confirm this. For instance, the anthropologist Cole notes for the Betsimisaraka of the east coast that

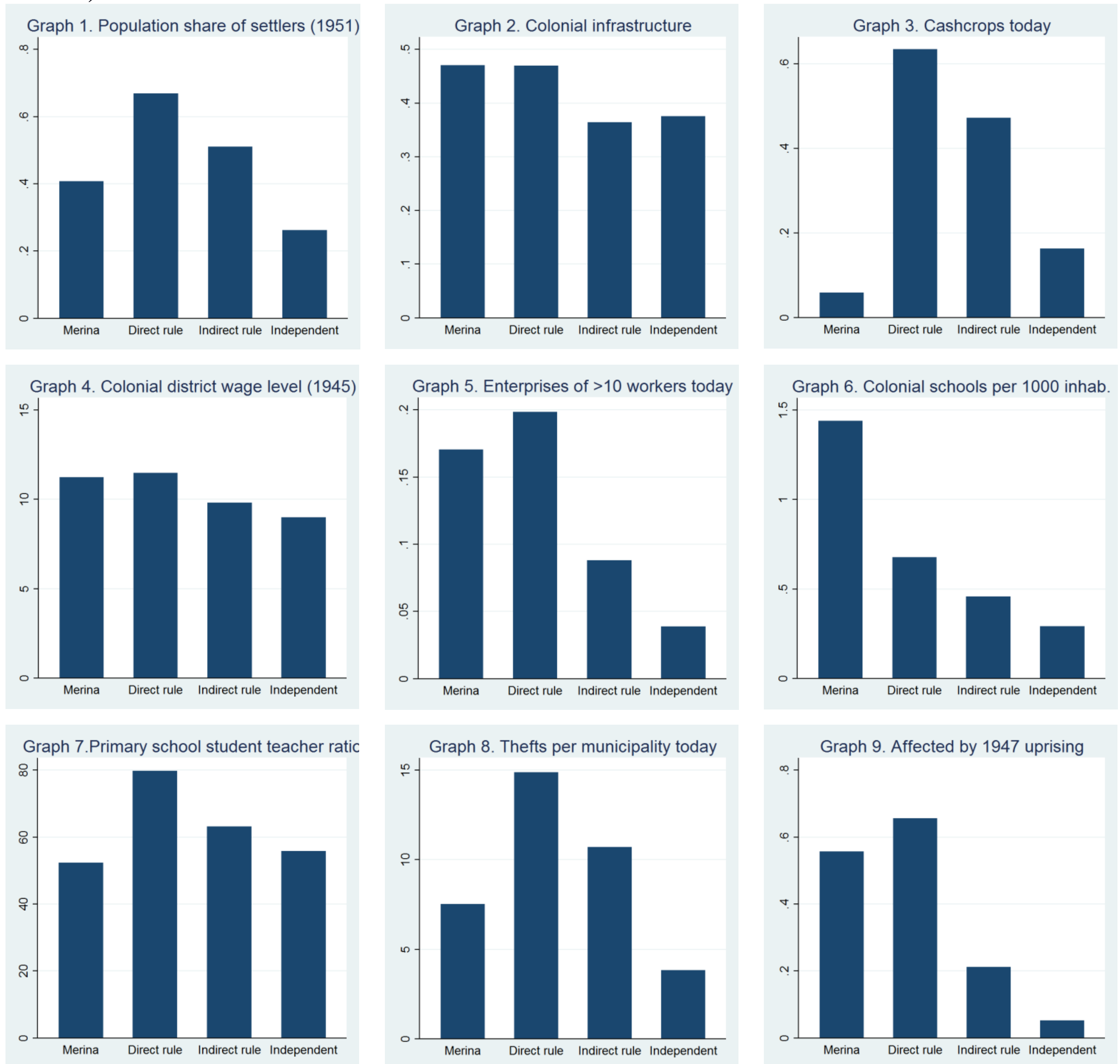
> "since the Merina conquest in the 18th century through the neocolonial regime of the 1960s, Betsimisaraka have experienced the state as a foreign predatory power" (Cole 1998:625)

In a similar vein, ethnographic studies from other ethnic groups and regions of Madagascar, such as the Sakalava of the northwest (Feeley-Harnickm, 1984; Sharp, 1993) and the Antankarana in the north (Lambek, 1996:243), consistently suggest that experiences of Merina occupation, and later French colonialism, reinforced local customs and traditions. The literature generally links these responses to local ancestral beliefs, which provide formerly colonized groups with a connection to times of greater political independence in the past (Cole, 1998; Middleton, 1999; Cole and Middleton, 2000).

I argue that these effects of Merina colonialism on local traditional institutions persisted because also key features of Merina rule remained relatively unchanged through the colonial and post-colonial period. As noted before, the French system of indirect rule incorporated many institutions from the precolonial period. This included the Merina legal code of 1887, which was used to govern affairs for the native population (Massiot, 1971; Brown, 1995). The Merina system of forced labor was also maintained to support the

construction of colonial infrastructure and the farms of French and Creole settlers (Cole 1998; Campbell, 2005).

Panel 1. Socio-economic indicators in the colonial and post-colonial period (by type of Merina control)



Bars represent the observed average on the selected variables within the territories defined by different modalities of Merina rule. Colonial wage levels, settler proportions, colonial school supply and participation in the 1947 uprising are measured at the level of the island's 110 districts. Colonial infrastructures and enterprises of 10 or more employees today are measured by dummies at the municipal level ('1' if a municipality had / has a colonial infrastructure or enterprises today on its territory). Production of cash crops is measured by dummies that identify municipalities were cash crops like vanilla, coffee or spices are the most important agricultural product. Source: Wietzke (2017) and agricultural census (see below).

Subnational historical data suggest that this disproportionally affected regions that used to be conquered by the Merina. For instance, Graphs 1 and 2 suggest that areas formerly under direct Merina control received the bulk of French and Creole settlers and a large number of colonial infrastructures. Also today formerly Merina-controlled areas continue to make important contributions to the country's export economy, with a larger number of communities involved in the production of cashcrops like coffee or vanilla (Graph 3).

Despite this relative continuity in local systems of economic extraction it is important to note that the transmission of the effects of Merina rule appears to have taken place through more complex processes than the economic mechanisms often highlighted in the literature about precolonial institutions or economic studies of ethnic conflicts (see e.g, Collier and Hoeffler, 2004).

In economic terms the consequences of precolonial and colonial extraction on living standards in formerly Merina-controlled areas were not straightforward. As in other parts of Africa, incorporation into the colonial cash economy often had positive effects for the economic wealth of the local population (Berry, 1993; Austin, 2008). For instance, regions formerly under direct Merina rule had marginally higher wage levels in the colonial period (Graph 4) and they have better access to manufacturing jobs today (Graph 5). However, the supply of public goods was much less developed in formerly occupied areas. In particular in education, inequalities created during the time of missionary involvement during Merina rule persisted relatively unchanged for much of the colonial period (Graph 6, see also Wietzke, 2014). Today, primary school student teacher ratios -an indicator of education quality and possible mismatches between local education demand and supply- are highest in regions that used to be under direct Merina rule (Graph 7).

There is comparatively more support that effects of Merina rule are transmitted through the psychological and institutional transmission mechanisms highlighted by ethnographic studies. Levels of theft in formerly Merina-controlled areas are among the highest in Madagascar today, which suggests that local social and political institutions are weaker (Graph 8). The same areas were also disproportionally affected by an anti-colonial uprising, which erupted in the east coast in 1947 (Graph 9). In retrospect described as one of the bloodiest colonial conflicts in Africa, the uprising is estimated to have cost between

30.000 and 100.000 casualties, often from starvation and disease, as local populations were driven into the east coast's forests by the fighting (Althabe, 1969; Tronchon, 1974; Cole , 1998). Previous work by political scientists Omar Garcia-Ponce and Leonard Wantchekon (2011) suggests that the trauma caused by the conflict is still reflected in lower levels of self-reported political freedom and engagement among affected populations today. This result is consistent with the idea that populations in former Merina-occupied areas would turn first to local customary institutions to address their day-to-day needs. In addition, ethnographic research from the region again relates these responses directly to the experience of past Merina domination. For example Cole (1998:625) notes that the Betsimisaraka in the area still blame the Merina for their involvement in the uprising.

Econometric analysis

The remainder of this paper provides more formal support for the idea that the experience of past Merina rule had a direct effect on the strength of customary institutions today. The dependent variable consists of a binary indicator that takes the value of 1 if a locality reports the presence of a customary authority on its territory and 0 otherwise. Despite the shared origins of Madagascar's customary institutions in ancestral cosmology, the manifestations of this variable can vary across ethnic groups and localities. For example, among the Antemoro in the south and central highlands the link to the ancestors is assured through local healers and diviners (*ombiasy*). Among the Tsimihety in the north customary authorities are dominated by village elders (*Sojabe*). Among the traditionally more centralized Sakalava of the north-west, kings and sovereigns dominate (*mpanjaka*).

Data for the dependent variable are available from municipal-level institutional mapping exercises and focus groups, carried out in 2001 as part of a unique nationwide agricultural census by Cornell University and local research institutes.[8] In contrast to other ethnographic and survey-based studies that dominate the literature about traditional institutions in Africa, the census enables me to evaluate the prevalence of customary institutions at relatively low levels of aggregation across all the regions of the island. Once

8 See http://www.ilo.cornell.edu/ for a detailed description of the data.

outliers and missing control variables are accounted for, the study sample includes close to 1200 of Madagascar's 1395 municipalities at the time of data collection.

By implication, the country-wide availability of information about the local prevalence of customary authorities also provides me with an unusually fine-grained measure of the extent of contemporary state capacity at the local level. In particular the large literature on neopatrimonialism often considers the dualism between formal legal and informal traditional authorities as a sign of the relatively weak embeddedness of modern 'Weberian' state institutions in African societies (see above and Bayart, 1993; Mamdani, 1996; Bierschenk and De Sardan, 1997).

Map 3 provides initial descriptive results of the relationship between the intensity of Merina control and the strength of customary institutions today. Especially along the east coast there is a clearly visible discontinuity in the prevalence of customary authorities between the traditionally Merina-dominated central highlands and directly-controlled areas in the east coast. This is consistent with the claim of ethnographic literature that the strength of traditional institutions should increase with the intensity of past Merina rule. Regions to the north of the Merina heartlands that were under indirect Merina rule also have relatively consistent manifestations of customary authority. This may reflect long-term effects of the slave trade, which, after it was displaced from the east coast, aggravated the situation for the population in the west (Campbell, 2005). The primary exceptions in the expected relationship are in the far west of the island, where previously independent areas have a relatively high prevalence of customary authority today, as well as in the southern (Betsileo-dominated) highlands that were under direct Merina rule but lack strong traditional institutions today. In the former case this is probably again explained by the resilience of the slave trade in the more remote western regions of Madagascar. In the latter case it probably reflects above-average levels of missionary activity in the Betsileo-dominated southern highlands (Wietzke, 2017).

The econometric tests of this association are based on municipal-level data, estimated with the following equation:

$$\textit{Customary authority} = \alpha + \beta \cdot \textit{type of Merina control} + \lambda \cdot \textit{controls} + \varepsilon \qquad (1)$$

The main right hand side variable of interest is a set of dummies for the four types of past Merina control described above. Merina heartlands are the reference (omitted) category. Similar results were obtained when I compared outcomes to areas that were never under Merina control. α is a constant term and ε the regression's error term. Coefficients are estimated through a probit model, given the binary nature of the dependent variable.

The basic specification is conditioned on set of controls for historical and geographic influences that could affect the local prevalence of local customary authority. In particular missionary presence has been identified as an important determinant of the local prevalence of customary authority in Madagascar (Wietzke, 2017), so this variable is part of the basic specification.[9] Data on group-specific slave exports from Nathan Nunn (2008) are also included to account for the effects of slavery, in particularly in the western regions of Madagascar. Controls for geographic attributes, notably terrain ruggedness, elevation, temperature, and precipitation are included because they have been shown to mediate the relationship between local political behaviors and intervening variables like slavery and conflict (Nunn and Puga, 2012; Wantschekon and Garcia-Ponce, 2015). Table A1 in the annex provides descriptive statistics and the original sources for these controls. All continuous variables have been transformed into their natural logs. Because of the large number of missing values in Murdock's atlas, I do not account directly for ethnicity specific institutional traits. However, I show below that the results hold when I estimate effects of different modalities of Merina rule only within the same ethnic group (the Sakalava of the west coast), effectively holding other group level characteristics constant.

Probit coefficients from the basic specification are presented in Column 1 of Table 1. Direct Merina control has the expected positive effect on the prevalence on customary authority. Traditional institutions are also more developed in regions under less direct forms of Merina control. However, as predicted these effects decrease with the intensity of Merina rule.

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[9] The variable measures the number of missionaries per 1000 inhabitants at the district level in the early colonial period (1904, see Wietzke, 2017). The overlap between missionary work and Merina rule is not perfect, so the variable can be included as a control in its own right (Wietzke, 2017)

Estimates in Columns 2 and 3 gradually augment the model with controls for influences in the colonial and post-colonial era.[10] Column 2 accounts for colonial settlement, colonial infrastructures and wage levels in 1945. The specification also controls for districts affected by the 1947 uprising, to demonstrate that results are not driven by formerly Merina controlled communities in the east coast that also bore the brunt of colonial violence.[11] Estimates in Column 3 also account for contemporary economic conditions, notably road accessibility, infrastructure availability, cash crop production, manufacturing activity, and average adult education levels.[12] The colonial controls (except colonial settlement), today's travel time and adult education all enter significantly and with the expected sign. However, none of these controls removes the effect of direct and indirect Merina rule on the prevalence of local customary institutions.

Table 1 about here (see back of paper)

Robustness tests

I have argued above that the persistence of a relatively extractive model of economic exploitation in formerly Merina-occupied areas is one of the reasons why it is still possible to observe effects of Merina rule in these regions today. However, this raises a potential challenge for causal identification: Is it possible that formerly Merina-controlled areas are just more suitable for predominantly extractive activities that are often associated with weaker formal state institutions (Acemoglu et al., 2002)?

Although I am not able to fully discount the possibility of unobserved geographic influences there are strong signs that outcomes in the east coast are not driven by particular types of economic or agricultural production that are predetermined by the region's geological or geographic attributes. The slave trade, for one, did not represent a unique and

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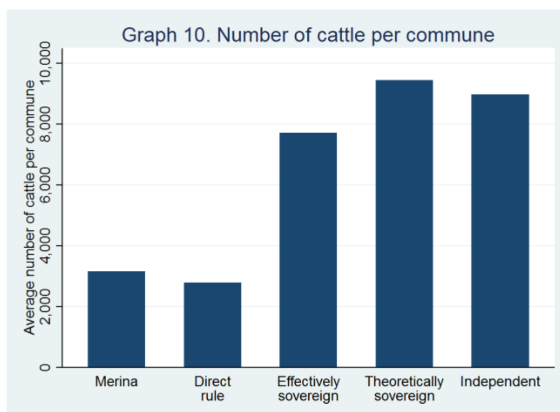
[10] These variables are added in separate specifications because they could be considered as 'bad controls' (Angrist and Pischke, 2009). In particular economic and educational variables may be a direct consequence of past Merina rule.

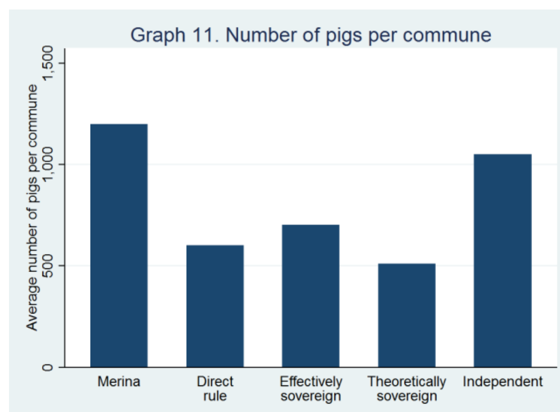
[11] I use data from Garcia-Ponce and Wantchekon (2011).

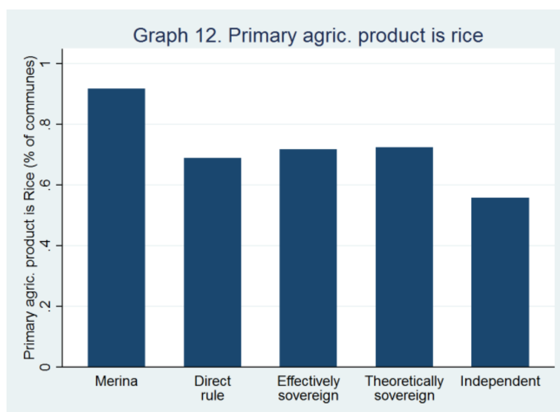
[12] Note however, that these variables could be regarded as 'bad controls', since some of them are partially determined by past Merina institutions (see above).

permanent burden on east coast populations, as its impacts shifted to the west after the imposition of abolitionist policies under the Anglo-Merina treaties. Similar observations can be made about other important export staples for the precolonial trade with Mauritius and Réunion. Key products at the time, like livestock, dried beef, and rice (Campbell, 2005:206), have given way to other tropical cash crops like vanilla, coffee or spices in the colonial period, and are now more frequently produced in the Merina heartlands or in regions that were formerly independent or under more indirect modalities of Merina rule (Panel 2). This suggests that, if there is a time-invariant geographic influence on local institutions in formerly Merina-occupied areas, it does not work through the region's geographic suitability for only certain types of economic and agricultural activity.

Panel 2: Livestock and rice cultivation today







Bars represent the observed average on the selected variables within municipalities under different modalities of precolonial Merina rule. Source: Agricultural census.

To further mitigate concerns about possible unobserved locality-specific influences I continue by moving the econometric analysis from the geographic to the ethnic group level (Table 1, Column 4). The treatment variable is now the dominant type of Merina control in the territories historically occupied by each of Madagascar's officially recognized 18 ethnic groups, based on the traditional ethnic homelands described in Map 1. Contemporary ethnic settlement patterns are identified from the agricultural census, which recorded information about the most important ethnic group in each municipality. Although this specification has the advantage that it accounts for possible population movements since the early colonial period, I do not treat it as my preferred model, because it omits a lot of variation in the exposure to Merina rule within the ethnic homelands of some groups (see above).

Estimates in Table 2 also distinguish between locality- and ethnicity-specific effects of Merina control, this time using individual-level information from the Afrobarometer survey for Madagascar. Data are from Round 4 of the survey, which offers particularly detailed information about local views about traditional authorities. The dependent variable is a binary indicator which takes the value of 1 if the respondent reported that he/she trusts traditional leaders 'somewhat' or 'a lot' and 0 otherwise.

Column 1 in Table 2 reports baseline estimates where the treatment variable is the type of Merina control in a respondent's current locality. Column 2 moves to ethnicity-specific effects, by identifying impacts of Merina institutions through the dominant type of Merina rule in the historical homeland of a respondent's ethnic group (using the same approach as above). Column 3 represents the most demanding specification, by restricting the sample only to respondents who have moved to localities that were formerly under a different type of Merina control than their respective ethnic homelands. This estimation effectively excludes unobserved geographic influences that could simultaneously explain the type of Merina control imposed in a locality and the level of trust in contemporary institutions reported today. All estimates include the same set of historical, geographic, colonial-era, and contemporary economic controls as the specifications in Columns 3-4 of Table 1. Controls are now averaged at the district level, the primary sampling unit of the

Afrobarometer survey.[13] Standard errors are equally clustered at district level, to account for this feature of the survey. All estimates also control for individual attributes including education, religion, age, age squared, gender, urban residence, and poverty (measured by self-reported food security).

Table 2 about here (see back of paper)

Across specifications, direct Merina rule always has an influence on self-reported trust in customary institutions that is stronger than that of other types of Merina control. This difference increases in the model for ethnicity-specific effects (Column 2). Although estimates in the restricted sample are less robust because of the much smaller sample size, the effect of direct rule does not change much and still comfortably passes the 10% significance threshold. In addition to accounting for possible unobserved geographic influences, the robustness of results in the individual-level Afrobarometer data also increase my confidence that previous results are not driven by possible measurement and coding errors in the local focus groups and institutional mapping exercises that produced the data for the agricultural atlas used in Table 1.

I next present a robustness test that exploits exogenous variation in local historical institutions, caused by a steep escarpment that separates the Merina-dominated central highlands from the east coast lowlands (see red line in Map A2, Annex 1). The anthropologist Mary Douglas (1962) famously used a similar spatial divide (a river), to compare the institutional characteristics of the Lele and the Bushong, who otherwise lived in very similar geographic conditions. Garcia-Ponce and Wantchekon (2011) have replicated this approach in Madagascar, by using the eastern escarpment as a source of exogenous variation in their analysis of the impacts of the 1947 anti-colonial uprising. Here, I use the escarpment primarily as an exogenous barrier to institutional spill-overs that could be caused by migration or the relocation of east coast populations that tried to evade the reach of the Merina state. In the case of the eastern lowlands, such evasive movements were not possible due to the natural barriers represented by the eastern escarpment and the

[13] Average adult education levels are dropped and replaced by individual education of the respondent.

coast. Groups in the east coast simply had no choice but to submit to Merina rule, as they were literally caught between the mountains and the sea.

The test is carried out through a regression discontinuity design that compares only municipalities whose centroid is located 35km or less to the right and left of the escarpment. While Map 3 already indicates visible differences in the prevalence of customary institutions along the escarpment, the regression results confirm this result with the full set of geographic, historical, and contemporary controls included (Table 1, Column 5).[14]

The last robustness test returns to group-specific information to address the possibility that the likelihood of Merina occupation and the strength of customary authorities today are simultaneously determined by other time-invariant group attributes. As noted previously, the ease with which Merina conquered new territories differed with the initial level of political centralization among local populations, with a greater likelihood of direct Merina control in areas that lacked the organizational capacity to put up meaningful resistance to Merina invasion. This could invalidate my results, if these same groups also reject modern forms of centralized state institutions in favor of more decentralized customary authorities today.

The possibility that current outcomes are shaped by other group-level influences has also been a concern for earlier literature about the effects of ethnicity-specific systems of authority from Murdock's atlas. However, previous studies have dealt with this problem only by controlling for other observed group-level attributes (see for example Michalopoulos and Papaioannou, 2013). I make progress by accounting also for possible unobserved group-level influences. Specifically, I estimate impacts of Merina control only for the Sakalava ethnic group, which experienced all major variants of historical Merina rule (see above). By exploiting variation in Merina institutions within the Sakalava in this way, I am able to hold other potentially unobserved group level characteristics constant.

The test on the Sakalava sub-sample are again divided between estimates that identify effects of past Merina rule on the basis of the historical and the contemporary

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[14] Controls for manufacturing activity and repression during the 1947 uprising are omitted due to co-linearity. The effect also remained significant when I altered the distance from the escarpment between 30 and 50 km.

distribution of ethnic groups (Table 1, Columns 6 and 7 respectively). Full independence serves as the reference category in both cases, since there are no historical Merina heartlands in these sub-samples. Again the results do not change the qualitative interpretation of my findings. The prevalence of customary authority is strongest in areas formerly under direct rule. The effect is weaker in areas under indirect control. Another advantage of these specifications is that I am able to exclude areas that were particularly affected by the island's colonial and post-colonial export economy in the east coast. In particular important tropical cash crops like vanilla or coffee cannot be produced in the semi-arid Sakalava homelands.

7. Discussion and conclusion

This paper has argued that studies that use data about group-specific political hierarchies from Murdock's (1967) *Ethnographic Atlas* risks omitting important information about historical interactions and political complexities across group lines. Using the case of the 19th century Merina Empire in Madagascar as an example, I have shown that measures of precolonial centralization that focus only on within-group hierarchies can not only lead to factually misleading statements about the effective extent of past centralization at the local level. I have also demonstrated that precolonial state building across group lines had a significant and robust effect on customary institutions and ethnic group relations today.

The findings have a number of implications for the rapidly expanding literature on the institutional origins of long-run development. At a conceptual level my findings speak against a recent tendency to 'depoliticize' the analysis of the historical analysis of group-specific differences and institutions. For example, whereas recent research about indigenous state formation in Africa has often focused on relatively stable and more easily identifiable causal drivers of institutional variation, such as local climate or geography (Fenske, 2013; Osafo-Kwako and Robinson, 2013; Alsan, 2016), earlier literature has consistently highlighted the highly contested nature of ethnic status relations and identities during the precolonial, colonial, and post-independence period (Fortes and Evans Pritchard, 1940; Radcliffe-Brown, 1940; Mamdani, 1996; Boone, 2003; Bates, 2008). More complete

analysis would try to bridge these two perspectives, such as by taking into account precolonial conquests or the shifting and renegotiation of ethnic power relations in the analysis of group-specific development trajectories (Cederman et al., 2010; Baldwin, 2015; Singh and vom Hau, 2016).

At a methodological level this study has also raised important questions about the way ethnographic data from Murdock's atlas are currently used in the literature. Murdock's own introduction to his data set suggests that much more caution should be applied when social and political institutions are compared across groups that are potentially culturally interdependent. At a minimum, concerns about possible interdependence between observations should be addressed through appropriate statistical methods, such as adjustments for spatial autocorrelation or heteroscedastic standard errors (in addition to country or regional fixed effects already widely used in the literature). However, my findings also suggest that concerns about Murdock's data cannot be fully mitigated by statistical techniques that account for area-specific correlations or similarities in group-specific averages alone. The main issue is that Murdock's atlas and the statistical methods typically used to analyze it do not capture the considerable heterogeneity in group-level outcomes that result from past interactions between ethnic groups or the higher-order political structures and processes they operate in. Again more careful analysis is needed that account for political processes and interactions along the lines described in this study.

I conclude by discussing the generalizability of my results beyond the context of Madagascar. While there are several aspects that make the Merina Empire a special case – such as the strong influence of British anti-slavery policies and Christian missionaries during the Merina's expansion in the 19th century- many of the Empire's political features and the long-term consequences of its conquests are entirely consistent with experiences from other countries and regions. For example, cross-country research by Hariri (2012) has shown that autocracy was often the dominant characteristic of precolonial states in the non-Western world. Likewise, military conquests and extractive practices (notably slavery) of other precolonial empires in Africa have been linked to conflictual ethnic relations and weak civic and state institutions in ways that very much resemble the findings of this study (Nunn and Wantchekon, 2011; Besley and Reynal-Querol, 2014; Dincecco et al., 2016; Fenske and Kala, 2017).

The primary question that arises from this study is why indigenous states in Africa have struggled so much to make the transition towards a more inclusive and stable form of political organization that would have helped to avoid many of these deficiencies. A possible focus for future research would be to study why modernizing tendencies that undoubtedly existed in the Merina Empire did not come to prevail, with external factors, such as French colonialism and the subsequent 'baking-in' of pre-existing autocratic tendencies into newly created modern state institutions as potentially dominant explanatory variables.

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Table 1: Impact of Merina control on local customary authority (agricultural census)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Base model	Colonial controls	Economic controls	Ethnicity-specific effects	Discontinuity around eastern escarpment	Sakalava only (territory in 1908)	Sakalava only (current distribution)
Direct Merina rule	**1.494***** **(0.190)**	**1.578***** **(0.200)**	**1.370***** **(0.206)**	**1.844***** **(0.242)**	**3.199**** **(1.540)**	**1.145***** **(0.434)**	**1.308**** **(0.618)**
Indirect Merina rule	**1.174***** **(0.205)**	**1.014***** **(0.214)**	**0.789***** **(0.220)**	**0.676***** **(0.212)**	**3.861** **(2.485)**	**0.761**** **(0.358)**	**1.217***** **(0.472)**
Theoretically sovereign	0.981*** (0.344)	0.928*** (0.345)	0.777** (0.356)	omitted	omitted	omitted	0.678 (0.630)
Independent	1.069*** (0.220)	0.757*** (0.234)	0.398 (0.251)	0.808*** (0.258)	omitted	omitted	omitted
Inhabited in 18th century	0.508*** (0.115)	0.449*** (0.120)	0.420*** (0.128)	0.201* (0.118)	-2.913** (1.376)	0.828*** (0.313)	0.539 (0.432)
Missionaries 1904	-0.494*** (0.140)	-0.411** (0.164)	-0.315* (0.167)	-0.108 (0.164)	-2.245** (1.075)	-0.864 (0.547)	2.989 (3.652)
Colonial wage 1945		-1.919*** (0.414)	-2.329*** (0.445)	-2.938*** (0.476)	omitted	-0.041 (1.698)	-6.481*** (1.771)
Colonial infrastructure		0.249*** (0.093)	0.293*** (0.101)	0.284*** (0.100)	3.885** (1.524)	-0.121 (0.223)	0.270 (0.298)
1947 uprising		0.560*** (0.121)	0.669*** (0.132)	0.481*** (0.143)	omitted	omitted	omitted
Population size			0.139* (0.078)	0.166** (0.077)	0.200 (0.715)	0.610*** (0.219)	0.897*** (0.332)
Dry season travel time			0.306*** (0.067)	0.174** (0.069)	-2.274** (1.152)	0.141 (0.143)	0.158 (0.147)
Adults with primary education or more			-0.191** (0.095)	-0.068 (0.096)	7.869** (3.367)	-0.646 (0.417)	-0.811*** (0.304)
Observations	1,199	1,199	1,199	1,173	112	214	134

Coefficients from probit estimates. The dependent variable takes the value of 1 if a municipality has an active customary authority on its territory (see above for a description of the variable. All models control for elevation, ruggedness, temperature, rainfall, distance to Antananarivo, slave exports and a constant term. Controls for colonial settlement and for contemporary poverty, infrastructure, cash crop production, and manufacturing firms were not significant and are not reported. All continuous variables have been transformed into their natural logs. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 2. Afrobarometer survey: Trust in traditional authority

	(1)	(2)	(3)
	Locality-specific effects	Ethnicity-specific effects	Restricted sample
Direct Merina rule	**1.561*** **	**0.680*** **	**0.698***
	(0.450)	**(0.217)**	**(0.377)**
Indirect Merina rule	**1.510*** **	**0.334***	**-0.337**
	(0.390)	**(0.192)**	**(0.237)**
Independent	1.438***	0.260	0.228
	(0.407)	(0.192)	(0.295)
Observations	1,220	1,220	384

Author's estimates based on Afrobarometer survey, Round 4. Coefficients from probit estimates. The model includes the same controls as estimates in Table 2, as well as control for gender, education, religion, age, age-squared, urban status and self-reported food security. All continuous variables have been transformed into their natural logs. Robust standard errors clustered at district level (in parentheses). *** p<0.01, ** p<0.05, * p<0.1

Annex 1

Table A1: Descriptive statistics

Variable	mean	Standard deviation	Source
Merina	0,22	0,41	Deschamps 1960
direct control	0,21	0,40	Deschamps 1960
indirect control	0,34	0,47	Deschamps 1960
theoretically sovereign	0,02	0,14	Deschamps 1960
independent	0,21	0,41	Deschamps 1960
under French control	0,00	0,05	Deschamps 1960
traditional authority	0,54	0,50	Deschamps 1960
Average elevation	596,13	537,22	ArcGIS
Hottest average temperature per year	30,82	3,09	ArcGIS
Annual rainfall	1588,83	607,59	ArcGIS
Ruggedness	96,68	79,70	Nunn and Puga, 2012
Distance to capital (in km)	705,84	729,67	ArcGIS
District inhabited in 18th century	0,64	0,48	Deschamps 1960
Slave export by ethnic group 18th century	12752,16	10693,73	Nunn, 2008
Missionaries per 1000 inhabitants in 1904	0,71	1,42	Wietzke, 2017
French settlers in 1951	0,44	0,68	Wietzke, 2017
Average wage level 1945	10,30	1,66	Wietzke, 2017
Colonial infrastructure	0,41	0,49	Agricultural census
Population 2001	14935,70	31815,12	Agricultural census
Poverty headcount 1993	0,72	0,12	Mistiaen et al., 2001
Contemporary infrastructure availability	-0,02	2,17	Agricultural census
Average travel time dry season	17,10	21,40	Agricultural census
Cashcrops	0,34	0,47	Agricultural census
Enterprises of 10 employees or more	0,11	0,32	Agricultural census
Adult education rate	0,33	0,15	Agricultural census
1947 repression	0,34	0,48	Wantchekon and Garcia-Ponce, 2011
Crime zone	0,30	0,46	Agricultural census
Cattletheft	9,12	22,17	Agricultural census

Map A1. Geographic representation of Murdock's Ethnographic atlas (precolonial centralization)

Pre-Colonial Jurisdictional Hierarchy Beyond Local Community Across Groups
Ethnicities' Homelands
0
1
2
3
4
N

Source: Michalopoulos and Papaioannou, 2013:118.

Map A2. Regression discontinuity design along the eastern escarpment

Customary authority in community
No customary authority
No data

Source: Deschamps, 1960:199 and Cornell / FOFIA agricultural census