Essays on Inequality of Opportunities and Development Outcomes in Indonesia

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Declaration

This thesis is a thesis by compilation. It contains no material that has been presented for a degree at this or any other university. To the best of my knowledge and belief, it contains no copy or paraphrase of work published by another person, except where explicitly acknowledged.

All chapters were written under the guidance of my supervisor, Professor Budy Prasetyo Resosudarmo. Chapters 1 and 5 represents work solely undertaken by myself while chapter 2 is a case study on indigenous slavery on Sumba Island, the initial plan for my thesis.

Chapters 2, 3 and 4 were done in collaboration with Professor Resosudarmo and it represents 85% of my contributions. Chapter 3, presents the case study on Austronesian-Hindu caste of Bali while chapter 4 deals with Muslim-Christian inequalities of opportunities. My contributions in these chapters covers the literature review, the residential survey on Sumba Island (a joint effort with Professor Resosudarmo), data analysis, choosing the appropriate dataset, reconstructing the caste information, the composition of the chapters as well as revision post presentation was undertaken by me.

The chapters on indigenous slavery and Austronesian-Hindu caste in the thesis, as well as the preliminary version of the Muslim-Christian inequalities of opportunities, have been presented in various seminars at the Australian National University and several academic conferences. These conferences include the 2nd Indonesian Regional Science Association (IRSA) International Institute Conference in Bandung Indonesia (July 2009), ADEW 2015 in Monash University, and Indonesian Regional Science Association Conference in Manado Indonesia (July 2016).

This thesis has had the benefit of advice on proofreading, consistency, and clarity provided by Trish van der End and Mark Bidwell. Both are not economists.

I am responsible for remaining errors and omissions.

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helps open up discussion on the necessity of fostering equality of development opportunities for the least among us, both in Indonesia and other places where inequality at birth is still the predominant worldview. *Veritas vos liberabit.*

Abstract

The inter-group gap in human capital is still a prominent public policy concern in the developing world where centuries-old institutions such as caste, indigenous slavery, and religious system create persistent unequal opportunities for development within the practicing society. The concern about inequality arises due to the bulk of scientific evidence that found that group preferences matter more than individual preferences when it comes to inter-group contestation for political power and its subsequent discriminative distribution of economic resources based on identity politics. This results in inequality of opportunities and, to some extent, inequality of development outcomes.

In Indonesia, the interplay between the social identities and their power base in affecting inter-group gap in opportunity and development outcomes has been part of public policy debate, but empirical evidence relating identity politics as the determinant of inequality of opportunities and human development outcomes is limited. As such, the goal of this thesis is to present empirical evidence on the abovementioned topic. The study covers three different institutions in Indonesia.

The first case study is the case of indigenous slavery with a little inter-class power dynamic between the nobility and the commoner classes on Sumba Island. Our estimation on 2015 Traditional Residential Survey dataset reveals that when the nobility monopolizes the leadership positions in the modern government, this power is first and foremost good for the educational attainment of the nobility themselves and to a lesser extent good for the educational attainment of their direct subject that is the slave class. However, as expected, the nobility's power share is bad for the educational attainment of their direct power competitor that is the commoner. Interestingly, the shift of power to commoner class does not alter the gain received by the nobility but suppress the human capital gain for the slave class. Why does the slave class benefit more from the ruling regime of their master rather than from the ruling regime of the commoner class? The possible answer lies in the ‘carrot and sticks' strategy used to maintain and make the slavery system profitable and the lesser of two evils principle played by the nobility class.

Meanwhile, in the second case study, the case of inter-caste reversal of power in Bali, our estimation using SUSENAS 2002 show that the exogenous political shock in Bali reduced inter-caste gap in human capital acquisition and its subsequent labor market earning, but do not extend to business income and household consumption. The possible explanation for the

reduction in gaps of human capital acquisition and earning is because the power takeover by the peasant caste suppresses the ability of the formerly ruling high caste to discriminate against the now ruling peasant caste and their opportunity for development.

In the third case study on the religious-based opportunity and human capital disparities in Eastern Indonesia, using 1971 and 2010 Population Census data, our estimation results confirm our hypotheses that for overall population the colonial and post-colonial religious affiliations advantaged the educational achievement of the sub-population with similar religious identity to the national rulers. However, the finding does not apply for some sections of the population due to local minority advantage phenomenon. Indeed, in the case of both Muslim local minorities outperforming their Christian counterparts and Christian local minorities outperforming their Muslim counterparts, being identified with a ruling group does not generate advantages in human capital acquisition.

To the best of our knowledge, this thesis would be the first study that quantifies the gaps of human capital acquisition and earning if traditional social stratification and group-power in the government entities has indeed fostered inequality in modern Indonesia.

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Chapter 1. Introduction

1.1. Background and Motivation

The inter-class gap in human capital is still a prominent public policy concern in the developing world where centuries-old institutions such as caste, indigenous slavery and religious-based identities create persistent unequal opportunities for development within the practicing society. The concern about inequality arises due to the bulk of scientific evidence that found that group preferences matter more than individual preferences when it comes to inter-group contestation for political power and its subsequent discriminative distribution of economic resources based on traditional social identities (Fukuyama, 2015; 2018; Mohseni and Wilcox, 2016). This situation induces the inequality of opportunities and, to some extent, inequality of development outcomes (Piketty, 2017; Fukuyama, 2018). Historically, there is ample empirical evidence that the in-group preference is among the main triggers of resentment, conflict, and even war, more often than not resulted in a lose-lose situation for the groups involved (Fukuyama, 2015).

Despite the massive investment by democracy to modernize the government systems so traditional societies becomes more egalitarian, the traditional social institutions that favour collective interests of people's groups based on religion and traditional class are not only surviving but have been on the rise globally, free-riding on the democratization process (Mohseni and Wilcox, 2016). Moreover, the perforce discrimination values of these traditional social institutions seems to win over the supposedly equality values from democracy and secularism. Among others, this strong presence of traditional identity politics both is observable in the recent victory comeback of religious leaning parties in government election cycles in Hungary, Italy, Croatia, Egypt, Iran, India, and Japan. Additionally, it is also observable in the widespread of inter-religious, inter-caste, and inter-ethnic conflicts outside (Wagner and Meyer, 2017; Mohseni and Wilcox, 2016; van den Burg, Hobolt, and de Vreese, 2009). This situation begs the question on the relevance of the traditional social institution such

as the traditional class system, caste system, and religious system in determining inequality of opportunity and development outcomes in this modern time.

In Indonesia, up to recently, the empirical work on the interplay between traditional social institutions and the group's power in affecting inter-group inequality in opportunity and development outcomes is limited. Among others, this situation is due to previously incorrect overconfidence of the diminishing relevance of traditional institutions due to the modernization and secularization of society (Mohseni and Wilcox, 2016; Fox, 2016) and lack of availability of information on social identity in the previously published censuses and surveys.

1.2. Research Scope and Objectives

This thesis focuses on inter-group inequality of opportunities and human capital acquisition between the ruling and the non-ruling groups in Indonesian societies. Indonesia is the third largest democracy in the world and the biggest economy in Southeast Asia with a population of 238 million in 2010 (Statistics Indonesia, 2012). The Indonesian societies are ethnically and religiously diverse: composed of more than 600 language groups, each with its social stratification system. The country is also home to the largest Muslim society in the world who cohabitates the country with their fellow countrymen who are Christian, Hindu, Buddhist, and adherents of folk religions. Despite its abundant natural resources and vibrant democracy, Indonesia is plagued by stubborn poverty, rising inequality in household consumption, and inter-ethnic and inter-religious contestation and violent conflicts (World Bank, 2015; Yusuf, Sunmer, and Rum, 2014; van Klinken, 2007).

This thesis will examine the traditional worldview that possibly endorses inequality of development opportunity between the ruling class and the non-ruling class, the shift of power from the traditional ruling class to the new ruling class, and their long-term impact on inter-class disparities of human capital. The choice of human capital as the outcome variable is due to its central role as income equalizer (Piketty, 2017). The study covers three different institutions in Indonesia. They are indigenous slavery within Sumba society, caste system within Bali society, and Muslim versus Christian's religious-based opportunity in the eastern part of Indonesia.

This thesis will argue that the discriminative worldview of these traditional institution has granted specific ruling class, or caste, or religion to be in a commanding position against their low-ranking counterparts. Consequently, the dominant presence of this type of institution increasingly fosters inter-class inequality of opportunities within a society that factors into inter-class gaps of human capital acquisition. However, in the event of an exogenous political shock that is strong enough to cause a shift or reversal of the power holding into the hand of the previously subjected class, and this new ruling class also plays by the same rules of identity politics, the inter-class inequality of opportunity shall either decrease, or cease to exist, or be reversed. This situation of more equality then factors into either a reduction in disparities of human capital to the point that it may cease to exist or even be reversed.

The specific objectives of the research are:

1. To identify the impact of class identity under indigenous slavery and inter-class shift of local power from the nobility class *(Maramba)* to the commoner class *(Tau Kabihu)* and slave class *(Tau Ata)* on inequality of human capital acquisition among the Sumba society. Human capital is measured as years of schooling and body height.
2. To identify the impact of caste identity under the Bali caste system and inter-caste shift of local power from the high caste *(Triwangsa)* to the peasant caste *(Jabawangsa)* on inequality of human capital acquisition among the Bali society. Human capital is measured as years of schooling.
3. To identify the impact of religious identity among Christians and Muslims in Eastern Indonesia and the inter-religion reversal of national power from the Christians to the Muslims on inter-religion disparities of human capital acquisition in Eastern Indonesia. Human capital is measured as years of the completed schooling.

1.3. Methodology

The main method used to carry out the three case studies in this thesis is Ordinary Least Square (OLS) using exogenous independent variables. For all the case studies, the general equation is:

$$h_{ip} = \alpha + \beta Identity_{ip} + \Omega\ Power_i + \tau\ Identity_{ip} x\ Power_i + \theta_p + \mu_{ip} \qquad [1\text{-}1]$$

;

Where h_{ip} is the level of human capital acquisition of individual *i* who was born in region *p*; $Identity_{ip}$ is the dummy for social identity, that is hereditary class, caste, or religion, of individual *i* who was born in region *p*; $Power_i$ is the measure of power of certain people's group in government entities when individual *i* is at certain years of age; $Identity_{ip}x\ Power_i$ is the interaction term between the identity and power variables; θ_p is the region of birth fixed effect; μ_{ip} is the white noise error term; α is the constant term; and β, Ω, and τ, are OLS estimators. τ is the inter-group advantage in human capital for the ruling group. An advantage due to power holding is represented by $\tau > 0$, while a disadvantage is represented by $\tau < 0$.

For the study on Sumba indigenous slavery, the social identity of a respondent ($Identity_{ip}$) is a nobility class versus commoner class versus slave class. The $Power_i$ variable is the cumulative power of the nobility class when individual *i* is seven-years of age, which is decreasing slightly as the commoner class started to compete for and in a few cases won the power contestation in district and village level of modern governments. The central government of Indonesia establishes the current government entities, but appointment to the leadership position conform the stratification of people and job division in a traditional institution which is not based on merit system.

For the study on Bali caste, the social identity of a respondent ($Identity_{ip}$) is the high-caste Triwangsa versus the low-caste Jabawangsa. The $Power_i$ variable is the cumulative power of the high-caste when individual *i* is seven-years of age, which is decreasing sharply as the low-caste took over the regents' positions of Bali with the help of an exogenous political shock in 1995-1996 initiated by the military and authoritarian national government.

For the study on the religious-based opportunity in eastern Indonesia, the social identity of a respondent ($Identity_{ip}$) is Christian versus Muslim, or in the expanded category, it is Protestant versus Catholic versus Muslim. The $Power_i$ variable is the regime dummy that equals one if individual *i* was born after Indonesia's independence (1946 onward) under the Muslim rulers and 0 if born during the colonial period under the Protestant Christian rulers.

Following the bulk of literature on human capital, our main representation of human capital is educational attainment (Becker, 1993) and additionally, in the case of indigenous slavery, body

height (Glewwe & Miguel, 2008). Due to unavailability of rich data, we could not examine the quality aspects of the innate ability and quality of education and the mobility indicators. Hence, the main limitation of the thesis is the small representation of the elements of human capital it covers and its inter-generational mobility features.

1.4. Expected Contribution

The expected contributions of this thesis are three-fold. The first expected contribution relates to the understanding of exogenous sources of inequality in Indonesia and its possible causes from the institutional hypothesis perspective. Previous studies look into inequality of outcomes using individuals and household levels determinants such as age, sex, region, religion, ethnicity, and parental backgrounds. In contrast, this study will focus on examining the role of group identity within indigenous slavery, caste system, and religious system in fostering inequality of opportunities and human capital acquisition in Indonesia. The said traditional social institutions prevail despite efforts on building unified national values and identity. To the best of our knowledge, this thesis is the first study that quantifies - if traditional social stratification and group-power in the government entities foster inequality in modern Indonesia.

The second expected contribution is on expanding the empirical evidence on caste-based inequality of opportunity outside the South Asian caste system. This study will examine the Austronesian caste system of Sumba that contains indigenous slavery feature and the caste system of Bali that has a hybrid feature between Austronesian and the Indian caste system. By exploring the case systems outside South Asia, this study will enrich our understanding about the caste-based inequality of opportunity as well as function as a test if the argument of caste-based inequality of opportunity also works outside the Indian Hindu caste system.

The third expected contribution of this research relates to the accuracy of the group definition we used in our research that confirms the group aggregation in the real world. Main quantitative literature covers two-group caste disparities (Dalit versus non-Dalit in South Asia) or two-group religion disparities (Muslim versus Christian in Asia and Africa), while the reality is more complicated than this two-group contestation model. This study will push the complexity of the group contestation to three-group contestation, so it is closer to reality. As

we will demonstrate in the case of indigenous slavery in Sumba (Chapter 2) and religious-based opportunity in eastern Indonesia (Chapter 4) where we expand the number of groups being compared to three, the splitting of the group to their smallest possible social identity will help clarify the interconnectedness between group identity, power, and development outcomes.

1.5. Outline of the Thesis

Chapter One, the Introduction, layouts, the background and motivation of the research and follows with a description of the research scope and objectives, expected contributions, and organization of the thesis.

Chapter Two presents the worldview of the most primitive Austronesian traditional social institution in our study, the Sumba indigenous slavery. The caste system is embedded within the *Marapu* religion, the folk-religion of the Sumbanese. Moreover, it analyzes how the worldview of this ongoing practice of slavery translates into inequality of opportunity to the advantage of the nobility class who deprives the slave class of their freedom and economic rights. The data for the quantitative estimation comes from our Traditional Residential Survey in 2015. The chapter also layouts our strategy to identify the respondent's exogenous hereditary class within the slavery system and employs the strategy on the dataset. Moreover, it presents how we construct the cumulative power of class in the modern government to represent the small shift of government from the nobility to the commoner class. It then uses these two variables to quantify the direction and magnitude of the inter-class gaps in years of schooling and body height. The chapter is closed with an explanation on if the gaps represent the story of inequality of opportunity and effort from each class.

Chapter Three presents the worldview of the Bali caste system, a hybrid and simplified version an Austronesian caste system with Indian Hindu caste elements. The caste system is embedded within the Hindu Dharma religion of the Balinese. Furthermore, it analyzes how the worldview fosters into inequality of opportunity to the advantage of the high caste. The data for the quantitative estimation comes from our Indonesia's Socio-economic Survey in 2002 run by Statistics Indonesia.

Also, Chapter Three presents our strategy to identify the respondent's exogenous hereditary caste within the Bali caste system. Subsequently, we employ the strategy to determine the case of our sample, and the caste of the government leaders. We use the latter to construct the cumulative power of caste in the modern government to represent the reversal of power of government from the high caste to the peasant caste. We then use these two exogenous variables to quantify the direction and magnitude of the inter-caste gaps in years of schooling and its labor market return. The chapter is closed with an explanation on if the gaps represent the story of inequality of opportunity and effort from each caste.

The case study on Sumba represents a community whose district governmental power structure still co the caste structure. In contrast, the case study in Bali shows the conditions in which the caste structure is no longer the determinant of who holds power in government. The latter fosters more equality of opportunities and development outcomes compared to the former. However, the results of these two case studies might not be generalized to the whole Indonesian societies due to differences in the type of contestation. The type of contestation may differ in other societies. For example, in Aceh and Lombok, the power contestation is more between religious leaders (ulema) versus aristocracy (uleebalang) in Aceh, and between the aristocracy-turn-religious leader (tuan guru) in Lombok versus aristocracy who are not the religious leader in Lombok (McGibbon, 2007; Fahrurrozi 2018).

Differing from the previous two chapters that explore the traditional institution within single folk religion system, Chapter Four takes adherents of two religions (or three depending on the stage of analysis) and study it in the context of long-term interreligious contestation in eastern Indonesia. This chapter presents the worldview of Christianity and Islam and how their ongoing contestation and conflict rooted in experiencing development opportunity based on religion both during colonial and post-colonial regimes. The data for quantitative estimation comes from the harmonized population censuses 1971 and 2010 provided pro-bono by IPUMS-I. The chapter presents our strategy to the grouping of the respondents into two (Muslim versus Christian) or three (Muslim versus Protestant versus Catholic) religious groups. Furthermore, it presents how we construct the power of the religious group in the modern national government to represent the reversal of power of government from the Dutch Protestant to the native Muslim. It then uses these two exogenous variables to quantify the direction and magnitude of the inter-religious gaps in years of schooling. The chapter is closed with an

explanation on if the gaps represent the story of inequality of opportunity and effort from each caste.

Chapter Five, the Conclusion, provides the main finding of this study, discusses its policy implications as well as presents the thesis limitation and possibility of expanding the research both in microeconomics and macroeconomics fields of study.

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Chapter 2. Indigenous Slavery and Gaps in Human Capital Accumulation: Evidence from A Residential Survey

2.1. Introduction

The inter-class gap in human capital is still a prominent public policy concern in the developing world where centuries-old institutions create persistent unequal opportunities for development within the practicing society. The institution of slavery persists into the 21st century in some parts of the Middle East, North Africa, and Asia (Cox & Marks, 2006). Scholars estimated that the number of people living as chattel slaves and bonded labor was around 45.8 million in 2015, including those under inter-racial and inter-religious slavery in Syria, Iraq and North Africa (Walk Free Foundation, 2014; 2016). Due to its brutal nature, the effort to eliminate inter-racial and inter-religious slavery has been part of global development agenda. However, the oldest type of slavery that is indigenous slavery, that predates inter-racial and inter-religious slavery, has not been adequately examined in development research partly because it is viewed as less controversial; such slavery is hidden behind the mask of indigenous culture. Based on literature on inter-racial slavery in America, economists have long hypothesized that the institution of slavery asymmetrically benefits powerful slaveowners by depriving the powerless slaves of their freedom and income (Findlay, 1975; Brenner, 1976; Lagerlof, 2009), leading to long-run gaps in development outcomes and high levels of poverty among the slavery practicing societies. This unfavourable outcome could also apply to indigenous slavery. This unfavorable outcome could also apply to indigenous slavery. Notwithstanding its potential policy significance in understanding persistent inequality of opportunity, empirical studies on the contemporaneous impact of 21st-century indigenous slavery are limited.

This paper fills the literature gap by examining a case of present-day indigenous slavery in Asia. Specifically, we study the impact of the existing indigenous institution of slavery called

Paata[1] on the Indonesian island of Sumba on the inter-class gap in the human capital of the labor force born in 1950 and beyond, during which time the institution of slavery coexists with Indonesia's local government institution. The institution of slavery is embedded in an ancient Austronesian caste system (*Daditau*) of the *Marapu* religion which orders individuals into three hereditary ranks, from the highest to the lowest: *Maramba* (nobility, slave master), *tau Kabihu (*commoner), and *tau Ata* (slave). The main feature of separation of rank is the concept of degree of blood purity preserved through a strict and expensive ritual of caste endogamous marriage that possibly involves the death penalty for offenders (Hoskins, 1997). The caste system has existed for more than one millennium (van den End, 1996; Adam, 2004)[2]. It is exogenous to the present level and to inter-caste gaps in human capital and wealth in the sense that an upward or a downward change in the level of human capital and wealth does not alter one's caste category.

We define Sumba's indigenous slavery as the custom of slavery that is innate in Sumba society with slave-owners and slaves coming from the same Sumbanese ethnic background[3]. In a related term, we define a slave as an individual who is the property of and who performs compulsory labor for the nobility, politically and socially at the lowest strata of the society[4]. Meanwhile, we define human capital as a set of productive skills and attributes that are possessed by and inseparable from an individual in which the individual's productivity rises in the investment of such qualifications (Becker, 1976; Goldin, 2014). In this study, we limit the coverage of the set of human capitals to years of schooling as the proxy for knowledge accumulation, and body height as the proxy for long-term nutrition intake (Glewwe & Miguel, 2008). Nutrition status has positive implication on cognitive, motor, and psychomotor skills which are crucial for a productive life. Using IFLS data, Sohn (2015) and Bargain and Zehdan (2017) found the premium wage for higher body height in Indonesia labour market. Sohn (2015) found that a one standard deviation increase in height is associated with 5.3% more earnings or 8.8% more earnings per 10 cm controlling for education and experience.

[1] *Paata* is the Sumba word for 'to enslave'. The slavery institution in Sumba Island does involve ownership of another human being, though most of the pressure of being slaves is a local social one. If a slave does have an opportunity to run out of the island, which she/he can, she/he will be a free person. However, she/he can receive punishment when she/he returns to the island.

[2] Although the island has sequentially been incorporated into three different nation-states that is the Netherlands, Japan, and now Indonesia, the indigenous slavery practice within the island has remained untouched by national political agendas

[3] Following the definition of Bezemer, Bolt, and Lensink (2014) for indigenous slavery in Sub-Saharan Africa

[4] Following the definition of Reid (1983) for the indigenous slave in Asia

Meanwhile, Bargain and Zehdan (2017) found that each additional centimeter in height is associated with earnings gains of 2.5 percent.

Education and height are utilized since they are relatively easy to get and available at individual level. On other related development outcomes, we were unsuccessful on measuring income and expenditure on individual or family level by caste. This hurdle exists because most of the Nobility and Tau Ata live in a mixed-caste houses. The indigenous slavery system put the Nobility and their Ata in one production and expenditure unit but without exact rule for sharing of income from the production system. The same situation is found by Betke and Ritonga (2004).

This study aims at answering three interrelated questions. Firstly, how wide is the inter-class gap in human capital between slave-owners, commoner, and slaves? Secondly, does caste cumulative power share in the modern government contribute to the inter-class disparities in human capital? Our estimation strategy relies on a source of exogenous variation that is the fixed ancient caste rule that dictates the separation of the indigenous population into a hierarchy of three mutually exclusive ranks of hereditary status. We impose a multilevel (age and natal clan) fixed effect estimation strategy with additional covariates so that our coefficient of interest can be interpreted as an inter-caste gap in human capital. The data on human capital, slavery status, caste, natal clan, caste power share, and other covariates are derived from our Residential survey administered during October 2014 to March 2015.

The multi-level fixed effect estimation results reveal that the nobility has an enormous educational advantage over the two lower castes. The nobility class has 6.1 and 5.4 higher years of schooling compared to that of the slave class and commoner class, respectively. Meanwhile, there is only a very small, around 1.3 cm, height advantage for the nobility over the slaves. These results indicate the nobility's preference for the set of human capital of slaves that is healthy with a low enough level of education to perform repetitive manual tasks in traditional sectors; otherwise, should a slave acquire a high enough level of knowledge, he would move up to non-traditional sectors where the nobility has less control, and become a freeman.

To the best of our knowledge, this is the first empirical paper on the contemporaneous effect of present-day indigenous slavery on the inter-class gap in development outcomes in Asia.

Previous studies have focused on the impact of 17th to 18th century slavery on the 21st century inter-region gaps in human capital and income in America and Africa (Sacerdote, 2005; Dell, 2010; Acemoglu, Garcia-Jimeno & Robinson, 2012; Bezemer, Bolt & Lensink, 2014).

The paper proceeds as follows. The next section narrates the institutional setting of Sumba's indigenous slavery. Section 3 specifies the estimation strategy. Section 4 details the data and survey method. Section 5 presents and discusses the estimation results. Finally, section 6 provides the conclusion.

2.2. Literature Review

2.2.1. Sumba's Indigenous Slavery

The island of Sumba is situated in the southeast periphery of modern Indonesia. The constitution of Indonesia does not formally acknowledge the role of indigenous institutions of caste, slavery, and feudalism.[5] Nevertheless, these indigenous institutions remain in regions where the local nobility maintains political power (Soemardjan, 1989; Twikromo, 2008; Smith, 2009; Sulistiyanto, 2009; Monfries, 2015). One such institution is Sumba's indigenous slavery system. Research reports during the last four decades reveal the fact that indigenous slavery is still practiced by clans in the central and eastern parts of the island (Forth, 1981; Needham, 1987; Vel, 1995; Betke & Ritonga, 2002, 2004; Hoskins, 2004; Twikromo, 2008).

The slavery system is based on an ancient local caste system, which dictates that slave ranked individuals are in servitude to the nobility rank. The stratification contains a middle rank i.e. commoner rank which is free from the slavery practice but is of secondary importance when it comes to labor demand in the nobility-controlled agriculture sector and hand-woven traditional cloth production sector (Needham, 1987; Purawoha, 2008)[6]. The Sumba's caste-based slavery was first published in a Dutch report in 1920, but analysts speculated that slavery had been practiced for more than one millennium (Adam, 2004; Brequet, 2014). Up to recently, the Sumba's noble houses can still enforce the slavery system, most likely because they have been

[5] Except in Yogyakarta province where under the Yogyakarta Specialty Acts (i.e., Act No. 3/1950, Act No. 9/1955, and Act No. 13/2012) the positions of governor and vice-governor are bestowed permanently upon the heads of the Ngayogyakarta Hadiningrat and Pakualaman royal houses, respectively. The governorship positions in other provinces were elected by a representative vote in provincial parliaments (before 2004) and nowadays through popular vote (since 2004).

[6] The Sumba caste system is similar to both the Proto-Malay caste and the Austronesian caste in the neighboring islands of Bali and Sulawesi (Nooy-Palm, 1979; Reid, 1983; Dwipayana, 2001; Budiman, 2013).

able to maintain their leadership positions in Indonesia's local government entities as well as ownership of the majority of land and capital on the island.

The division of ownership of factors of production in the agriculture and hand-woven traditional woven cloth production sector under the indigenous slavery economy is presented in Figure 2.1. The highest rank that is the nobility, monopolizes the ownership of land, capital, livestock, and managerial skills. Moreover, they own the slaves as their labor force. The laborer should possess domestic household skills or farming or weaving skills or supervisory skills in the areas of farming and hand-woven cloth production. Due to their lack of freedom and inability to own land or acquire capital, the slaves are dependent on the work opportunity demanded by the nobility. The commoners own similar sets of skills as the slaves, but they are free labor, not owned by the nobility. However, the lack of ownership of land and capital does mean the commoner has a certain degree of dependency on the demand for labor in the nobility controlled farming and hand-woven cloth production sector.

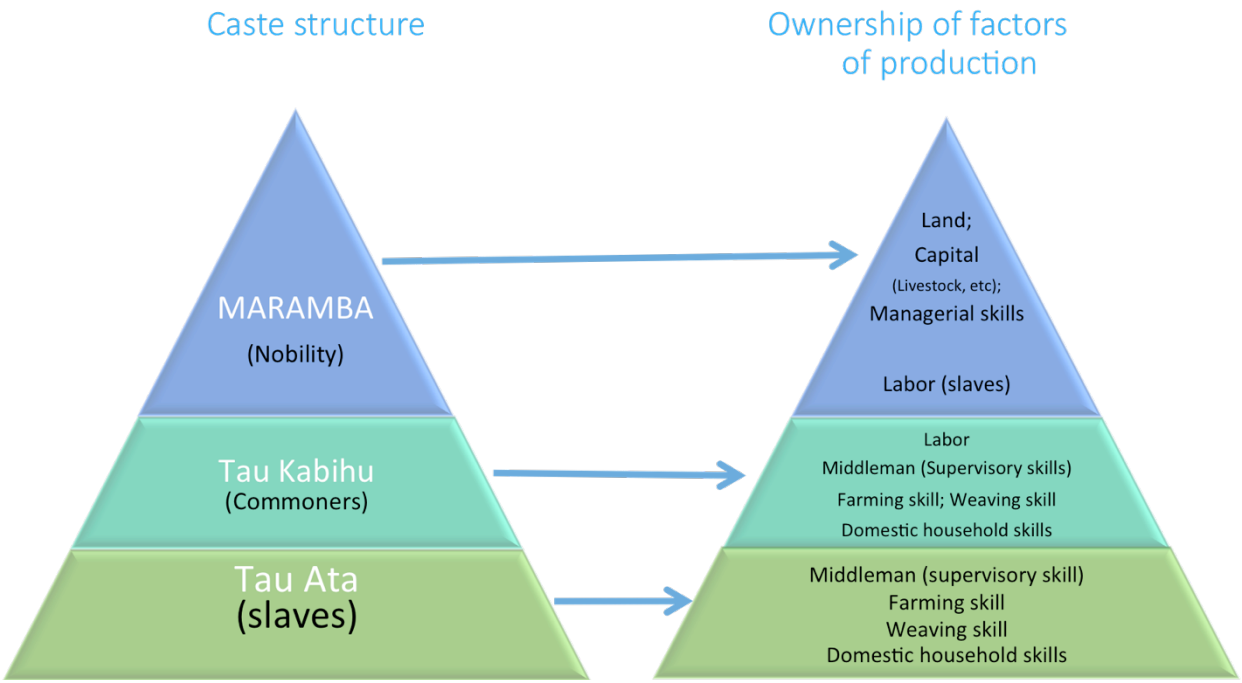

Figure 2.1. Caste structure and ownership of factors of production
Source: authors' analysis from Findlay (1975), Kapita (1976a, 1976b), Forth (1981), Purawoha (2008) & Twikromo (2008)

Though separated by rank, the economic relationship between castes is one of interdependence. In the agriculture and traditional cloth production sector, there is a high economic

interdependency between the noble landlords and their less educated subjects (i.e. the slaves). The slaves work for their noble masters, and in turn, the masters provide for at least five of a slave's basic needs: food, clothing, housing, marriage ritual, and funeral ritual. Additionally, the slaves also have ritual functions that is slave girls are part of the dowry that accompanies the bride to the groom's house, and both male and female slaves perform a companionship function for the deceased master during deathwatch and funeral ceremonies. The slaves could escape from the island, but they are constrained by their lack of competitiveness stemming from their low level of formal education. If they were to run away but then return to the island, they would be marginalized in the economic and social life on the island. In some cases, their immediate family could face harsh treatment. Hence, there is quite strong social pressure for slaves to remain in the system.

The caste system guarantees individual freedom for the commoner caste; they are not enslaved by the nobility. However, this freedom can be a liability when it comes to employment opportunities in the nobility-controlled agriculture and hand-woven cloth production system. Demand for the commoner's labor is positive only if there is a shortage of slave caste labor.

In the local government sector, the interdependency between the nobility and the commoner can be explained as follows. The noble class is the first mover in education and local government, both under the Dutch and the Indonesian governments. Thus, being the first group to receive formal education, the nobility has dominated leadership positions in the government service sector. The commoners follow second in education sector. Educated commoners join the sector initially in non-leadership positions and work under their noble bosses. Unfortunately, there has not been initiation for abolition of slavery in the island both during the Dutch administration and the Indonesian government. Therefore, the indigenous slaves still lack personal freedom and hence still attach to their nobility masters. Because of their lack of formal education, the slave caste individuals are confined to the labor intensive agriculture sector and rarely participates in the government employment sector.

Meanwhile, the trading sector has always been at the hands of the small Chinese and Arab communities since the Dutch administration took over the island. Prior to 1880s, the main inter-island export commodities were horses and slaves. Since the abolishment of inter-island trading of slaves by the Dutch government, the island's most important commodities have been horses

and cattle. The latter was introduced to the island in 1912 by the Dutch government (Kapita, 1976a).

2.2.2 Caste Marker

The accuracy of identifying one's caste is crucial to the estimation of caste or the class gap in human capital. The caste marker under Sumba's indigenous slavery system is maintained via the rigid naming system. For the nobility, the caste marker is the title that is placed in front of their name. There are two types of name for the nobility that is, *tamu* and *ngara.* Tamu, the ancestor's name, is the noble person's real name. It contains the noble titles, *Umbu* or *Tamu Umbu* for the male and *Rambu* or *Tamu Rambu* for the female (Kapita, 1976a, 1976b; Brequest, 2014; Purawoha, 2008; Twikromo, 2008; Barokah, 2016). These titles are caste markers for the nobility.

Meanwhile, *ngara* is an alias that contains the name of the noble person's main slave. To identify the slave caste, we scan through the alias of their masters. This strategy is because the caste markers of the slaves are not put in their names but in the alias (*ngara*) of their master. The common alias of the male nobility is *Umbu nai X*, or *Umbu ni X*, or *Mirri nai X*, where *X* is the male slave of the said nobility. For example, the full name of the male noble is *Umbu Nggaba Maramba Amah*, and his alias is *Umbu nai Pa Undu,* translated as 'Master of Pa Undu'. *Pa Undu* is the main male slave of the said noble. The common alias of the female nobility is *Rambu nai Y*, or *Rambu ni Y*, or *Mirri nai Y*, where *Y* is the main female slave of the said noble. It is common for the Sumbanese to address nobility by their alias that contains the name of one of his or her slaves (Kapita, 1976a, 1976b; Purawoha, 2008). Both the masters and their slaves are attached to the same noble house where the master is the owner, and the slave is the servant. There is no caste marker for commoners. They are identified by the clans they belong to. The commoner class is no structurally affiliated to any noble house, except through their role as priest assistant during ceremonies.

2.3 Estimation Strategy

The general equation used to estimate the inter-class gaps in human capital between the nobility, slaves and commoners is as follows:

$$log(h_{id}) = \alpha + \beta Nobility_i + \lambda Commoner_i + \Omega\, e_d + \theta_d + \pi Z_i + \mu_{id} \qquad [2.1]$$

where h_{id} is the specific human capital of individual *i* who was born into clan *d*; $Nobility_i$ is the dummy for caste that equals 1 if *i* is a noble and 0 otherwise; $Commoner_i$ is the caste dummy that equals 1 if *i* is a commoner and 0 otherwise; the reference caste is the slave; θ_d is the clan fixed effect that enters the equation in the form of 10 clan dummies in which case the slaves follow their master's clan; Z_i is a set of individual covariates such as sex, and school supply at age 7 in his or her natal region; μ_{id} is the white noise error term; α is the constant term; and β and Ω are OLS estimators. We have deliberately chosen the log form for the dependent variable to accommodate the fact that the higher the average human capital, either the average years of schooling or body height of a caste, the higher the resources needed to increase it.

In the case of years of schooling, $(exp^{\beta} - 1)$ multiplied by 100 would measure the percentage of the average gap in years of schooling between the nobility and the slave. This gap is positive if the slavery system advantages the nobility because of their years of schooling. In the same manner, $(exp^{\lambda} - 1)$ multiplied by 100 would measure the percentage of the average gap in years of schooling between the commoner and the slave. The value of $(exp^{\lambda} - 1)$ will be positive if the system advantages the commoner caste because of their years of schooling. Meanwhile, the gap between nobility and slave equals $\{100 * (exp^{\lambda} - 1) * \bar{h}_{nobility}\}$. It follows that the gap between commoner and slave equals $\{100 * (exp^{\lambda} - 1) * \bar{h}_{commoner}\}$. The same iteration and interpretation apply for the estimation of inter-caste gaps in body height.

Concern over sample selection bias is prevalent in cross-sectional data if it does not allow us to force co-residence of parents and children (for example, see Hnatkovska, Lahiri & Paul, 2013). Suppose the more educated young cohort from the enslaved family left the residence and only the lowly educated stayed, β and λ would be biased upward. To avoid this bias, we added the information of all children living outside the residence into their parents' household information so that all children are covered in our analysis.

Regarding concerns over simultaneity, recall that in Equation [2.1] we define $Nobility_i$ and $Commoner_i$ as the caste of individual *i*. Because caste assignment is entirely exogenous to

one's human capital, the direction of impact can only be from caste ($Nobility_i$ and $Commoner_i$) to development outcome (h_{id}), and not the other way around.

All estimations are performed using sample weight derived from the inverse probability of a residence being selected in our enumeration area.

Our working sample does not come with perfectly homogenous distributions of sex, age, and mother's education across caste groups. Therefore, we include a female dummy, a set of 41 age-dummies to create the age fixed effect, and a set of five dummies for the mother's highest educational attainment: no degree, completed year 6, year 9, year 12, or university degree. Age fixed effect is utilized instead of a continuous variable of age to control for other factors that can affect people of certain year-of-birth such as the macroeconomic condition in Sumba that may vary across years but are not included in the regression.

Information about the mother's education is preferable to that of the father. This is especially true for the children of slaves. In Sumba's indigenous slavery setting, the slaves do not have a formal marital arrangement such as in an upper caste marriage. Therefore, although there is certainty about the biological mother of a child, there is less certainty about the biological father. Using the mother's education helps to avoid measurement error with regard to parental education.

In Sumba, although local government entities are still dominated by the nobility, commoners have occupied some leadership positions both at the district and village level. To examine the impact of the power share of the nobility on the years of schooling of each caste, we augment equation [1] with a variable that represents the long-term power share of the nobility (P_g^N) and its interaction with the caste variables. The extended equation is:

$$\log(h_{id}) = \alpha + \beta Nobility_i + \lambda Commoner_i + \theta_d + \kappa P_g^N + \tau P_g^N * Nobility_i + \varphi P_g^N * Commoner_i + \pi Z_i + \varepsilon_{id} \quad [2.2]$$

where P_g^N is the power share of the nobility caste in a particular level of government g when the individual i is seven years old. Age seven is chosen as the cut-off point because this is the age when a typical Indonesian child enter elementary school. We want the power variable to precede the school outcome that is 0 to 16 years of schooling. A cut-off at older age, for

example 13 years when a typical child enter secondary school, will reverse the sequence of power and schooling attainment if the child dropped out of school before reaching age 13. Therefore, it is more reasonable to use the age of enrolment to grade one as cut-off.

There are two levels of government that is, village and district. They enter the equation separately.

We define the nobility's power share in district *k* in year *t* as:

$$P_{k,t}^{N} = \frac{\sum_{1950}^{t} G_{k,t}^{N}}{t-1949} \qquad [2.3]$$

where $G_{k,t}^{N} = 1$ if the Regent *(Bupati)* of district *k* in year *t* is from the nobility, and zero otherwise. Year 1950 is used as starting point because this is the year that the local government was established by the newly independent Government of Indonesia. In that initial year, all Regents in Sumba were from the nobility caste.

Numerically, $P_{k,t}^{N}$ is the total number of years the nobility rule as regent relative to the age of the district (in year) since beginning 1950. The ranges of nobility's power share ($P_{k,t}^{N}$) is (0,1] where 1 means that the nobility rules continuously since 1950. If, after 1950, a commoner is appointed to the Regent position, the value of nobility's power share ($P_{k,t}^{N}$) decreases to below one. This decrease indicates that the other caste has started accumulating power while simulatenously, the nobility has started losing power. We illustrate the computation using one of the districts in Sumba, as presented in Table 2.1.

Table 2.1. Computation for Nobility's power share in district of East Sumba

Year	*Caste of Regent*	$G_{k,t}^{N}$	$\sum_{1950}^{t} G_{k,t}^{N}$	*t-1949*	$P_{k,t}^{N}$
1950	Nobility	1	1	1	1
1951	Nobility	1	2	2	1
1952	Nobility	1	3	3	1
1953	Nobility	1	4	4	1
1954	Nobility	1	5	5	1
1955	Nobility	1	6	6	1
1956	Nobility	1	7	7	1
1957	Nobility	1	8	8	1
1958	Nobility	1	9	9	1
1959	Nobility	1	10	10	1

Year	*Caste of Regent*	$G_{k,t}^{N}$	$\sum_{1950}^{t} G_{k,t}^{N}$	*t-1949*	$P_{k,t}^{N}$
1960	Nobility	1	11	11	1
1961	Nobility	1	12	12	1
1962	Nobility	1	13	13	1
1963	Nobility	1	14	14	1
1964	Nobility	1	15	15	1
1965	Nobility	1	16	16	1
1966	Nobility	1	17	17	1
1967	Nobility	1	18	18	1
1968	Nobility	1	19	19	1
1969	Nobility	1	20	20	1
1970	Nobility	1	21	21	1
1971	Nobility	1	22	22	1
1972	Nobility	1	23	23	1
1973	Nobility	1	24	24	1
1974	Nobility	1	25	25	1
1975	Nobility	1	26	26	1
1976	Nobility	1	27	27	1
1977	Nobility	1	28	28	1
1978	Nobility	1	29	29	1
1979	Commoner	0	29	30	0.97
1980	Commoner	0	29	31	0.94
1981	Commoner	0	29	32	0.91
1982	Commoner	0	29	33	0.88
1983	Commoner	0	29	34	0.85
1984	Commoner	0	29	35	0.83
1985	Commoner	0	29	36	0.81
1986	Commoner	0	29	37	0.78
1987	Commoner	0	29	38	0.76
1988	Commoner	0	29	39	0.74
1989	Commoner	0	29	40	0.73
1990	Commoner	0	29	41	0.71
1991	Commoner	0	29	42	0.69
1992	Commoner	0	29	43	0.67
1993	Commoner	0	29	44	0.66
1994	Commoner	0	29	45	0.64
1995	Nobility	1	30	46	0.65
1996	Nobility	1	31	47	0.66
1997	Nobility	1	32	48	0.67
1998	Nobility	1	33	49	0.67
1999	Nobility	1	34	50	0.68

Source: Author's calculation based on government data

The power share of nobility started at value 1 in 1950. In 1951 the Regent was a nobility. Therefore $G^N_{k,1951} = 1$. For 2 years period since 1950, the total length of time the nobility rules the district is 2 years. Therefore, the nobility power share in 1951 was 2 year of ruling divided by a 2-year time period. The nobility power share was 1. The nobility ruled continuously from 1950 to 1978 for 29 years. Therefore, from 1950 to 1978, the nobility power share is 1.

However, in 1979, the central government appointed a commoner for the Regent position. Therefore $G^N_{k,1979} = 0$. In 1979, for 30 years period since beginning 1950, the total length of time the nobility rules the district was 29 years over 30 years. Therefore, the nobility power share in 1979 was 29 years of ruling divided by 30 years, or 0.97. The commoner stayed at the Regency helmet until 1994. In that year, the nobility rule for 29 years out of 45 years period. The nobility's power share in 1994 was 29 divided by 45, equals 0.64.

When a nobility was appointed to Regent's position to replace a commoner in 1995, the nobility has ruled accumulative for 30 years over 46 years period. Their power share increased from 0.64 to 0.65. Hence, the nobility power share will decrease if there is a takeover by other caste but will increase if they regain the Regent position.

In the same vein, we define the nobility's power share at the village government level in year *t* as:

$$P^N_{v,t} = \frac{\sum^t_{1950} G^N_{v,t}}{t-1949} \qquad [2.4]$$

where $G^N_{v,t} = 1$ if the head of village government *(Kepala Desa)* of village *v* in year *t* is from the nobility, and zero otherwise. Similarly, year 1950 is used as starting point because this is the year that the local government was established by the newly independent Government of Indonesia. In that initial year, all head of village governments in Sumba were from the nobility caste. Numerically, $P^N_{v,t}$ is total number of years the nobility rule as head of village government relative to the age of the village (in year) since beginning 1950.

There is a possibility that a power acquisition is not entirely exogenous. The caste power accumulation variable we used is from 1950-1999 during centralized and autocratic regime where position in local government leadership was by appointment from central government or its representative and not through popular vote. The regent and head of village government

positions were initially privilege to the Nobility caste. This was done by the Indonesian central government who did not want to disturb the social structure of the people so as not to cause additional conflict in the region. Moreover, the central government did not want establish a new structure of society in the island because the cost of establishing a new structure was higher than its economic benefit: compared to other mining and trading islands, the island of Sumba is a small economy. Therefore, I argue that the power accumulation is more likely exogenous because it follows the preference of the central government rather than the structure of human capital in the district.

The equation [2.2] is estimated separately for village and district levels of government. The coefficient κ is the impact of the nobility's power share on the human capital of the slave caste. $\kappa + \tau$ is the impact of the nobility's power share on its own human capital. The sum of $\kappa + \varphi$ is the impact of the nobility's power share on the human capital of the commoner caste. Because that power share in government leadership positions gives rise to access of and control over government money and projects (Mueller, 2003), we expect the nobility to benefit more than the slave from their power domination in local government. Therefore, τ is expected to be positive. Beyond that, if the commoner caste gains more human capital than the slave does under nobility leadership, then φ will be positive. If the opposite is true then φ will be negative. If both the two lower castes acquire a similar level of human capital under nobility leadership, then φ will be equal to zero.

2.4 Data Collection

2.4.1. Survey Design

Our primary data comes from our 2015 Residential Survey. The population of the survey is the indigenous Sumbanese living in two adjacent districts that is, Central Sumba and East Sumba. The Sumbanese usually live in their clan's ancestral residences called *paraingu* (Forth, 1981; Webb, 1994; Vel, 1995). Each clan has two types of residence *that is* primary residence *(paraingu bakul)* that is the first dwelling place of the clan, and secondary residence *(kotakku)* that are subsequent dwelling places as the clan's population expands (Kapita, 1976a, 1976b; Forth, 1981; Betke and Ritonga, 2002, Purawoha, 2008). Therefore, each clan has only one primary residence but can have several secondary residences. The primary residence is the center of the clan government and rituals.

By definition, both the primary and secondary residences are mixed caste settlements. The difference is that the primary residence contains more nobility and slaves, while the secondary residence contains more commoners. Only nobility and commoner own houses in the residential complex. A noble family can have more than one house in a residential complex; each house serves distinct economic and ritual functions. The nobility's houses are situated on higher ground, at the front part of the residential complex, facing a row of the nobility's megalithic tombs (Betke & Ritonga, 2002; Barokah, 2006; Purawoha, 2008). The houses of the commoners are usually in a lower part of the residential complex, called *kabata,* indicating the lesser caste of its occupants. The slaves usually live with their masters; they sleep in their masters' main houses, secondary houses, farmhouses, kitchens, or storage areas. They can be perpetually homeless in a sense because, by the caste rule, they are not eligible to own land or their own house.

The sampling strategy is as follows. Clan-residentials are randomly chosen from the full list of residential available at the district governments. A census then is conducted at the selected residentials. This strategy is appropriate since the information on exact population and its structure on the island of Sumba is unknown (Betke and Ritonga, 2002). It is important to note that compared to the 2016 Susenas, the year of schooling in the Susenas is only slightly lower than that in the dataset collected for this chapter but they are comparable on distribution. The mean YOS of the population in Susenas 2016 is 7.06 with standard deviation of 4.14, while ours is 7.66 with standard deviation of 4.68. Therefore, we believe our sample is quite representative to the population data.

The sampling detail is as follow. In accordance with the mixed-caste co-residential feature in the primary and secondary residences, we employ a stratified sampling design. In the first step, we identified 36 primary residences and 644 secondary residences from the list of residences in the population database of the Office of Civil Registration in the districts of East Sumba and Central Sumba. Of these 680 residences, we randomly chose ten primary residences and 23 secondary residences. Having selected the residences, we employ a census method to all residents. To facilitate the census, we need the full list of houses and their residents. There are three steps involved:

(i) List all the houses in the residential complex, their ritual names, if the house is a noble house, and identify the respective owners.

(ii) List all the occupants of each house using information from the family cards database from the District Office of Demography (Indonesia: *Dinas Kependudukan Kabupaten*). The government data include an individual's parental name so we can pinpoint some family relationships among the occupants. Because there is under-reporting in the database from the government, we augment the list of occupants in each house by adding those who are not yet on the government list. The result is the full list of houses and their occupants.

(iii) Enforce co-residence between parents and children by further augmenting the list of occupants in part (ii) with names of children who live outside the residence due to their work, marriage or having been sent as dowry to another clan.

(iv) Having completed the list of houses and their occupants, run the residential survey questionnaire for every house and its occupants, with adult individuals in the house as respondents. The interview is in a semi-structured style with minimum coverage of essential questions explained in the next section.

The location of our selected residentials are presented in Figure 2.2.

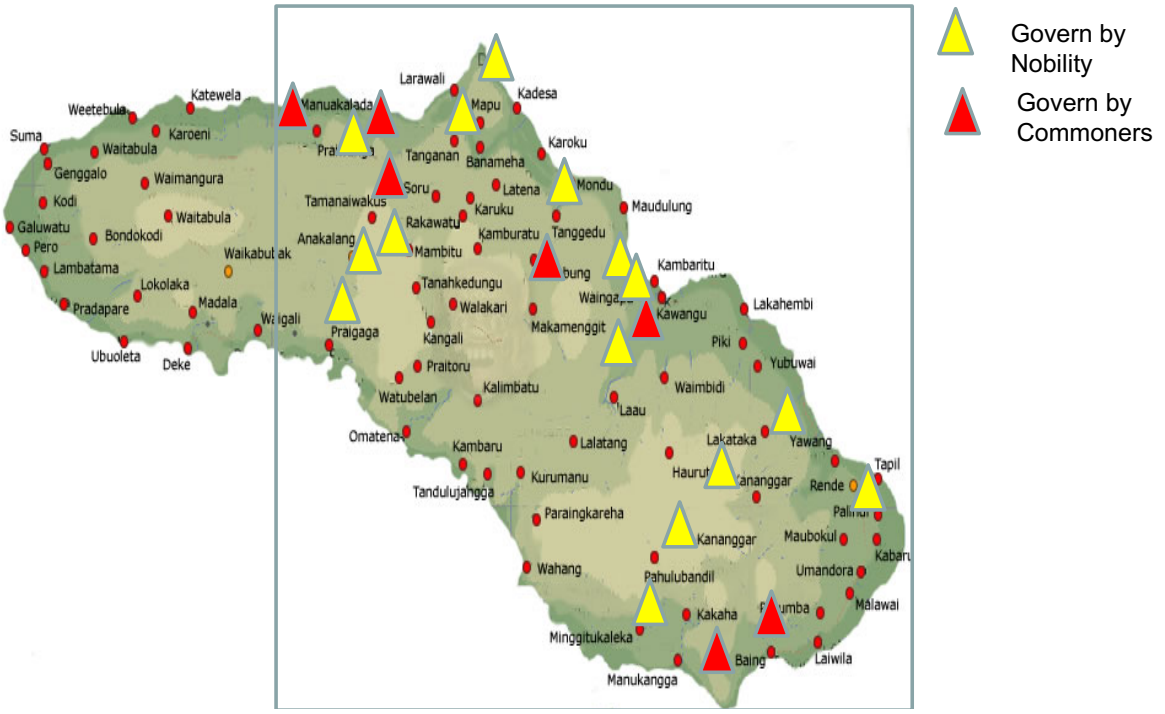

Figure 2.2. Location of selected residentials where the study was conducted
Source: author's analysis.
Note: As of 2015, 7 out of 27 village governments under which our selected residentials located were governed by commoners.

2.4.2. Main Questions asked during the Residential interview

Questions asked during the interview are aimed at retrieving information to construct the dependent and independent variables used in the estimation of inter-class gaps in development outcomes. Recall that our dependent variables are development outcomes that is years of schooling, body height, occupation, land ownership, and home ownership. The main independent variables are the caste or hereditary rank of the individuals. Additionally, the covariates are an individual's age, sex, natal clan, mother's education, father's education, mother's occupation, father's occupation, school density, and the power share of the noble caste in the local government. Except for the latter two variables, information for all the dependent and independent variables is retrieved from the residential survey.

We develop the following six-step algorithm to determine the main independent variable, the caste of the native Sumbanese in the residence:

(i) If a male individual has the noble title of *Umbu, Tamu Umbu,* or the alias of *Umbu nai, Umbu ni*, or *Mirri nai* then he falls into the category of nobility. It follows that all his siblings, descendants and blood-relatives also fall into this category.

(ii) If a female individual has the noble title of *Rambu, Tamu Rambu,* or the alias of *Rambu nai, Rambu ni,* or *Mirri nai* then she falls into the category of nobility. It follows that all her siblings, descendants and blood-relatives also fall into this category.

(iii) If the noble has an alias of *Umbu nai X, Umbu ni X, Mirri nai X* for a male, or *Rambu nai Y*, *Rambu ni Y,* or *Mirri nai Y* for a female, the object in the alias (i.e. *X* or *Y*) falls into the category of slave. It follows that all the siblings, descendants and blood-relatives of *X or Y* also fall into this category.

(iv) All non-nobility living in the houses of nobles who are categorized as *tau la umma (English:* children of the house, the euphemism for slaves*)* fall into the category of slave. It follows that all their siblings, descendants and blood-relatives also fall into the category of slave.

(v) All non-nobility who attach to a specific noble house but do not have a noble title fall into the category of slave. It follows that all their siblings, descendants and blood-relatives also fall into the category of slave.

(vi) All non-nobility and non-slaves who are not attached to any noble house fall into the category of commoner. It follows that all their siblings, descendants and blood-relatives also fall into this category.

To fulfil the above algorithm, the first block of the questionnaire contains the following questions about:

a) Full name including nobility title, if any;
b) Alias, which includes the names of the main slaves, if any;
c) Identification of relationship to the owner of the house that is the homeowner himself or herself, spouse, child, grandchild, parent, parent-in-law, sibling, in-law, nephew, niece, uncle, aunty, *tau la umma,* or not blood or structurally related;
d) Identification of biological family units within one house that is mother, father, children. Recall that a house can be a single caste or a mixed-caste (i.e. nobility and his/her slaves) domiciliary.
e) Identification of blood ties across houses within the residential complex to assist the easy identification of the caste of siblings, descendants, and blood-relatives of certain individuals within the residential complex. This allows for a quick snowballing step in deciding the caste of different individuals across different homes.
f) The name of the noble houses and the individual's relation to the noble houses that is owner or not;
g) Demographic information that is sex, age, natal clan, if migrating from other place and reasons for migration, including options such as to study, to marry, being given as dowry during a marriage or funeral rituals, or other.

For the main dependent variables, the questionnaire includes questions about:

a) Educational history, including the highest class attended and the highest educational qualification obtained;
b) Body height, through anthropometric measurement;
c) Current occupation, which we further divide into unpaid occupation versus paid occupation;
d) Family land ownership of rice field, dry land, and pasture[7];

[7] Information on assets, wealth, or income is not reported since it is difficult to identify which assets, wealth, or income is owned by Nobility and which one is by the Tau Ata within a clan.

Questions related to additional independent variables both on an individual and family level are asked subsequently for all individuals and for the family as a whole in each home surveyed.

There is a risk of either overestimating or underestimating the gap in development outcomes due to sample selection bias. For example, if a higher proportion of the more educated lower caste individuals left the residential complex than their noble counterparts, the chance is we could overestimate the gap in years of schooling. If the reverse is true, (i.e. a higher proportion of the more educated nobility left the residential complex than their lower caste counterparts), we could underestimate the gap. To get around this problem of sample selection bias, we enforce co-residence of children and parents by including information of all children who live outside the residential complex due to their study, work or marriage. However, because we are unable to perform anthropometric measurements for those living outside the residential complex, the risk of either overestimating or underestimating the gap in the body height remains.

During the interview, people from the slave caste tend to tell us their caste when we ask them questions that they think are unusual. For example, to the question of why they did not go all the way through school, their answer might be: "it is not what a slave does". In contrast, nobles tend to express their caste directly and confidently during the interview. However, commoners rarely give us a direct clue as to their caste during the interview.

2.4.2 Caste of Local Government Leaders

Recall that the second primary independent variable is the cumulative power share of the nobility in village and regency governments. We compile the full names and reigning period of Indonesian village heads since 1950 from the village offices, the local leaders in the residential complex, and from the regency office. Meanwhile, we compile the names and reigning period of the district head (or regent) since 1950 from public archives. The village heads and regents between 1950 and 2015 are all men. Therefore, we use the caste marker for the man to determine their castes. We decide the caste of government leaders using two combined strategies. First, we identify their castes based on the presence versus absence of a noble title. That is, if the leader has the nobility title of *Umbu, Tamu Umbu, Umbu nai, Umbu ni* or *Mirri nai*, then he falls into the category of nobility. Second, for leaders without a noble title, we seek information from the local nobility to determine whether the leaders are from the

commoner or slave caste. The information on the caste of leaders of government is public information in the context of a caste-based society such as Sumba.

2.4.3 School density

Recall that for the estimation of gaps in years of schooling, we include an additional covariate that is school density. We compile the data of schools established since 1875 from District Education Offices. We counted the number of elementary schools in each clan's traditional domain for each year since 1950. To obtain the school density variable, we divide the number of elementary schools by the area (km^2) of the clan's traditional domain.

2.5. Results and Discussion

2.5.1 Descriptive Statistics

The empirical analysis uses the sample of adults between 25 and 65 years of age. Our working sample is 1414 individuals, composed of 530 nobles, 434 commoners, and 450 slaves. In percentage terms, these numbers translate into 37.5% noble, 30.7% commoner, and 31.8% slave. The caste composition varies widely across natal clans. The sample share of the nobility is from 1.8% (in the Tabundung clan) to 86.8% (in the Anakalang clan). Meanwhile, the sample share of the slave is from 6.1% (in the Anakalang clan) to 81.8% (in the Tabundung clan) (see Figure 2.3). Compared to previous smaller residential study, the proportion of slaves in our sample is higher than that of Hoskins (1997) and Forth (1981), possibly because we cover the more remote residentials.

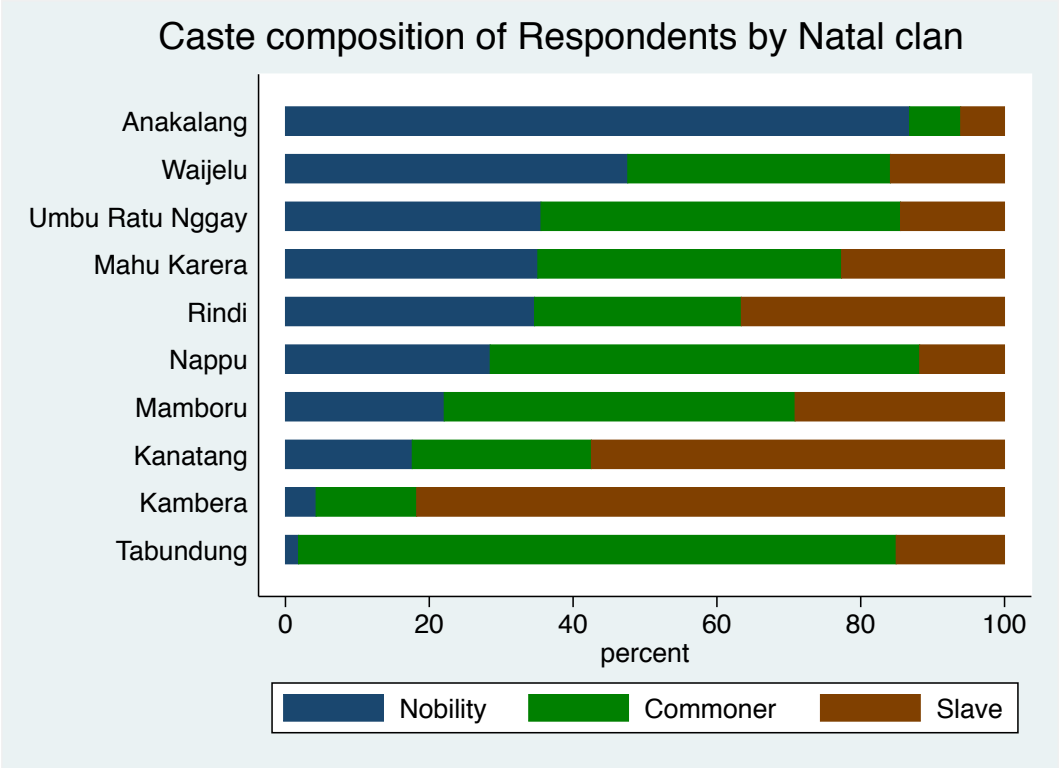

Figure 2.3. Caste composition of Respondents by Natal clan
Source: authors' analysis from 2015 Residential Survey

Our sample includes more clans that the individual clan studies by previous researchers on Sumba (Hoskins, 1997; Forth, 1981; Twikromo, 2008; Barokah, 2016). We included clans with a smaller population share of the slave caste.

During childhood, 98.22% of the Tau Ata in our sample lived with their mothers who worked in traditionally slavery related occupations such as homemaker, agriculture labour, or weavers. As of 2015, 91.56% of the Tau Ata in our sample worked in the same traditionally slavery related occupations. Therefore, we can say that significant majority of the Tau Ata caste still function as Tau Ata. Details information on caste and occupation of the sample and their mothers are presented in Appendix 2.1.

Table 2.2 presents the descriptive statistics of the sample. The average years of schooling of nobles, commoners and slaves are 9.4, 6.9 and 6.2 years, respectively. The mean difference in years of schooling between nobles and slaves is 3.2 years, between nobles and commoners is 2.6 years, and between commoners and slaves is 0.6 years. Both for the current labor force and their parents, the nobility also outperforms commoners and slaves when educational performance is measured at the highest educational level completed. More than 60 percent of

commoners and the slave labor force only have a Year 6 degree at most, whereas the highest educational level of more than 50 per cent of the nobility from the same cohort ranges from Year 9 to a University degree. Moreover, the majority of parents of the commoner and slave castes do not complete Year 6, while the majority of the nobility do. There is an indication of some upward intergenerational mobility in education for all castes which is shown from higher average YOS of the sample compared to the average YOS of their mothers or fathers (in Table 2.2), but there is no indication of the slave caste catching up to the level of the noble caste.

Table 2.2. Descriptive statistics

Variables	Nobility			Commoner			Slave		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Years of schooling, YOS	530	9.42	4.722	434	6.8	4.169	450	6.20	4.432
Log (YOS+1)	530	2.17	0.700	434	1.8	0.671	450	1.70	0.855
Individual's highest educational attainment:									
No degree	530	0.17	0.384	434	0.3	0.476	450	0.37	0.484
Y6	530	0.23	0.423	434	0.3	0.479	450	0.37	0.484
Y9	530	0.11	0.322	434	0.0	0.280	450	0.08	0.272
Y12	530	0.28	0.454	434	0.1	0.338	450	0.12	0.325
University	530	0.18	0.387	434	0.0	0.273	450	0.05	0.234
Body height (cm)	249	159.	12.22	183	158	12.43	189	156.	11.9
Log (Body height)	249	5.06	0.099	183	5.0	0.098	189	5.04	0.097
Age	530	40.6	10.71	434	40.	10.74	450	40.4	11.25
Female	530	0.51	0.500	434	0.5	0.501	450	0.50	0.501
Mother's highest educational attainment when *i* is 7 years of age:									
No degree	530	0.18	0.385	434	0.6	0.469	450	0.85	0.350
Y6	530	0.73	0.441	434	0.3	0.463	450	0.11	0.323
Y9	530	0.06	0.242	434	0.0	0.083	450	0.00	0.094
Y12	530	0.01	0.122	434	0.0	0.096	450	0.01	0.105
University	530	0.00	0.075	434	0.0	0.000	450	0.00	0.067
Father's highest educational attainment when *i* is 7 years of age:									
No degree	530	0.13	0.337	434	0.5	0.497	450	0.84	0.365
Y6	530	0.74	0.434	434	0.4	0.494	450	0.10	0.312
Y9	530	0.04	0.200	434	0.0	0.096	450	0.02	0.161
Y12	530	0.07	0.258	434	0.0	0.068	450	0.02	0.140
University	530	0.00	0.087	434	0.0	0.083	450	0.00	0.047
Nobility's power share at village level at age 7	530	0.97	0.073	434	0.9	0.220	450	0.81	0.298
Nobility * PNV7	530	0.97	0.073	434	0	0	450	0	0
Commoner * PNV7	530	0	0	434	0.8	0.287	450	0	0
Nobility's power share at district level at age 7	530	0.88	0.112	434	0.8	0.123	450	0.85	0.146
Nobility * PND7	530	0.88	0.112	434	0	0	450	0	0
Commoner* PND7	530	0	0	434	0.8	0.218	450	0	0
School density (N school/km^2) at age 7	530	3.75	1.963	434	3.7	2.077	450	4.90	2.598

Variables	Nobility			Commoner			Slave		
	N	Mea n	SD	N	Me an	SD	N	Mea n	SD
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sample weight	530	17.1	11.95	434	15.	12.00	450	13.4	11.73

Source: authors' analysis from 2015 Residential Survey

The trend in average years of schooling by age by caste group is presented in Figure 2.4.

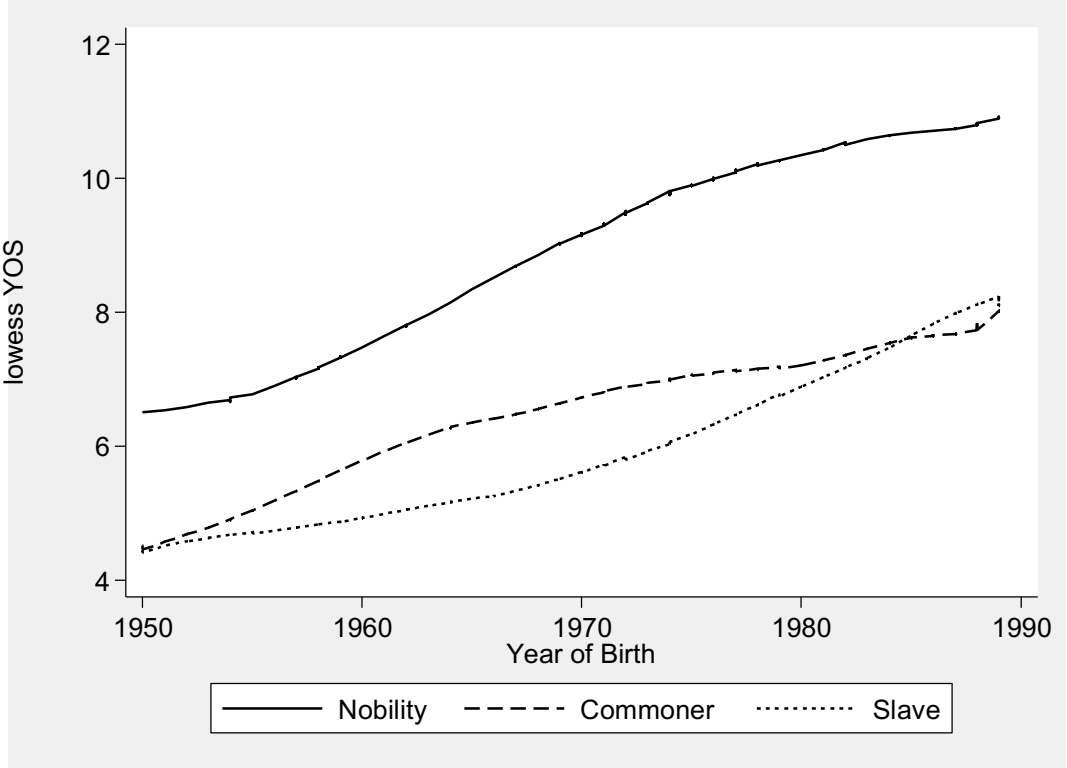

Figure 2.4. Time Trends in Years of Schooling by Year of birth by Caste
Source: authors' analysis from 2015 Residential Survey

Based on Figure 2.5, there is a still clear advantage in educational outcome for the nobility over time. The commoner and slave caste individuals who were born in 1950 have similar average years of schooling. However, the younger cohorts of commoner caste who were born between mid-1950 and early 1980 have higher average years of schooling than their slave counterparts. The average years of schooling of the two lower ranks converge for those born between the late 1980s and 1990. The trend for convergence between the two lower caste is probably induced by two government's supply policies that lower the education cost such that the it is not too much of expenses for the nobles to send their slaves to nearby cheap schools. These policies are, the six years compulsory schooling and the public schools' constructions. We control for the supply side of education in the regression.

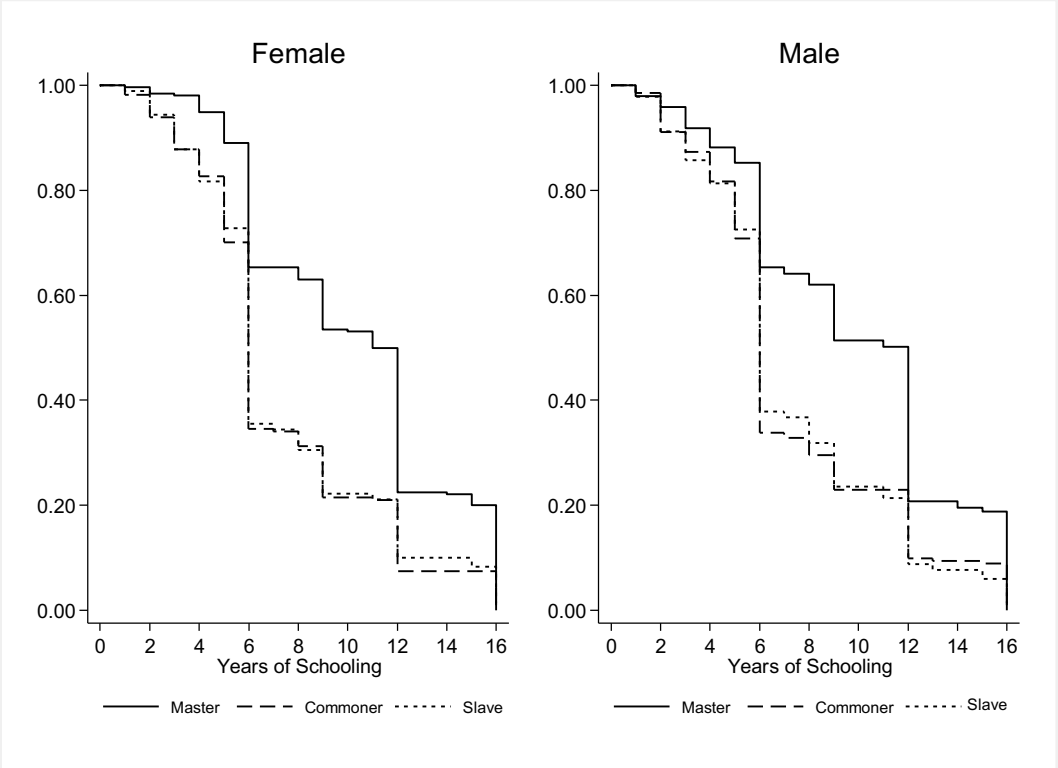

Figure 2.5. Kaplan-Meier Schooling survival-time plotting for Male and Female by Caste
Source: authors' analysis from 2015 Residential Survey

The left panel shows that, if they ever enroll in elementary school, a huge percentage of female slave individuals drop out of school too early during elementary school years. The closer they get to the first national exam at the end of Year 6, the higher the dropout rate. More than 70 percent of female slave individuals drop out after completing the elementary school leaving exam. Around 16 percent more individuals of this group quit school between year 7 and the second national exam in Year 9. Those who enroll in grade 10 in senior high school are less likely to quit school before completing the third national exam in Year 12. Less than half those who take the Year 12 leaving exam enroll in university and of those who enroll there is only a tiny dropout rate before obtaining a university degree. This indicates that regardless of the caste category, schooling survival increases with the level of education. The pattern of schooling survival of commoner female individuals is similar to that of slaves. In contrast, the overall schooling survival of noble female individuals is higher than that of the slaves and commoners. The highest dropout rate among the nobility occurred after the completion of the third national exam (at Year 12). There is no difference visible trend of schooling survival by sex.

Regarding parental educational attainment, close to two-thirds of the nobility - mother (74 percent) and father (75 percent) - completed Year 6 (elementary school). Meanwhile, only 11 percent of slave mothers and 11 percent of slave fathers completed an elementary school degree (Year 6). The commoner parents' educational attainment is somewhere between that of the slaves and the nobility. About 41 percent fathers and 31 percent mothers from the commoner caste completed elementary school. For the individuals in our sample, there is an indication that both the noble caste and the slave caste had made a big jump in intergenerational education performance. This causes a trend of convergence in the highest educational attainment between the slave caste and the commoner caste.

All the three castes have a similar average age (40.22 to 40.69 years) and gender composition (50 to 51.3 percent female). On average the nobility and slaves grew up in the traditional domain with a higher school density than the commoners. This is because both the private, mostly Catholic and Protestant mission schools, and public schools were typically built next to the primary residential complex where the majority of the nobility live. Usually, the mission or the government fund the school constructions but the local landlords need to dedicate their land for the school buildings. Because the owners of the lands were the nobility individuals, the schools were then built next to the residential of the nobilities.

Because the slaves usually live with to their masters, the slaves reside in an area with higher school density than where the commoners live. The commoners usually live far from the primary residential complex, away from where the nobility resides, and hence in an area of lower school density.

Regarding body height, the average body height of an adult noble is 159.3 centimeters, while the average body height of commoners and slaves are 158.3 and 156.3 centimeters, respectively. Kernel density of body height by caste is presented in Figure 2.6. It indicates that the three castes seem to have a similar pattern of height distribution, but the slave caste lags behind the two higher castes.

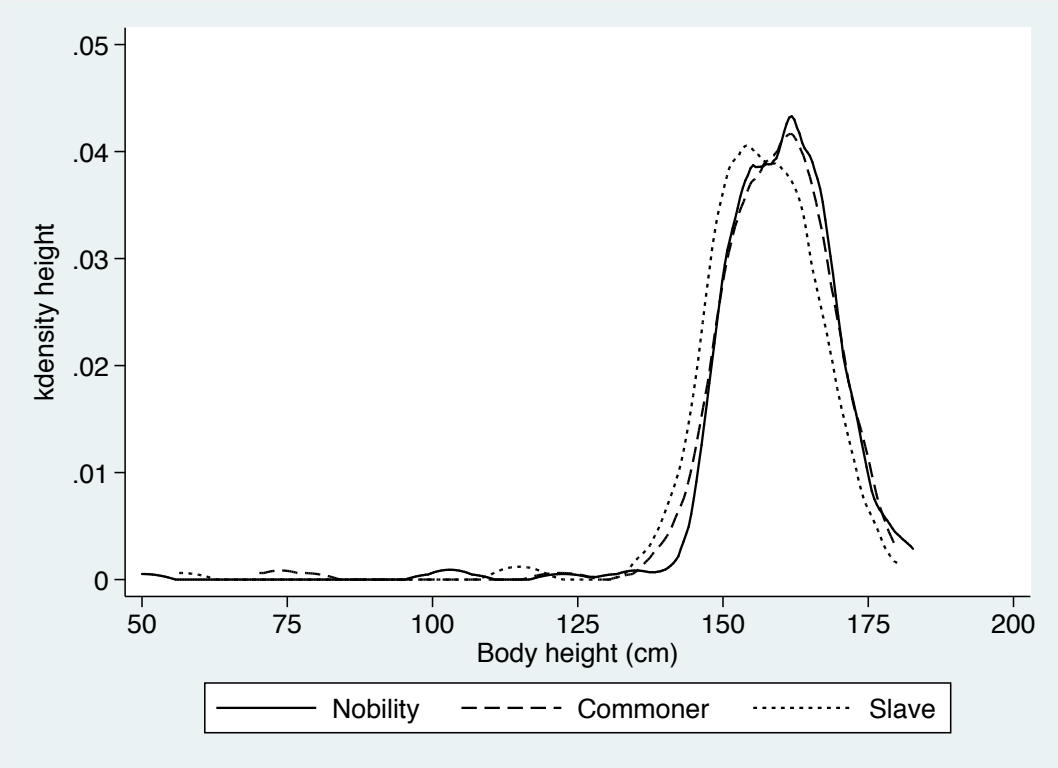

Figure 2.6. Kernel density of body height by caste
Source: authors' analysis from 2015 Residential Survey

2.5.2. Hereditary Rank (Class) and Power-share in the Local Government

Before the Dutch occupation, the Sumbanese were organized under several clan *(kabihu)* based government units. Following the Dutch pacification in 1920, the Dutch overlaid the Dutch government structure with the clan-based local government structure, therefore allowing for both structures to coexist. The Dutch also introduced schools to educate the nobility so they could lead the new government entities on behalf of the Dutch because it was too costly for the Dutch to rule directly in this economically poor island (van den End, 1996). During Dutch administration, the local government leadership was a privilege of the nobility (Purawoha, 2008). In 1950, the Indonesian government strengthened the local government structure, with more funds from the central government flowing to the island. However, since the 1960s the government of Indonesia has appointed the commoner rank but never any individuals of slave ranking to the position of Regent.

Two districts that are covered in this study, they are Central Sumba and East Sumba, have shown different patterns of power shift (see Figure 2.7). The Central Sumba[8] district was

[8] Previously part of the district of West Sumba until 2007; the data for 1950 to 2006 refer to West Sumba.

initially governed by the nobility from 1950 to 1962, and then subsequently run by the commoners for a short period before being taken back by the nobility between 1980 and 1995, and then from 2010 onwards. Overall, as of 2015, the nobility still dominates leadership positions in district governments.

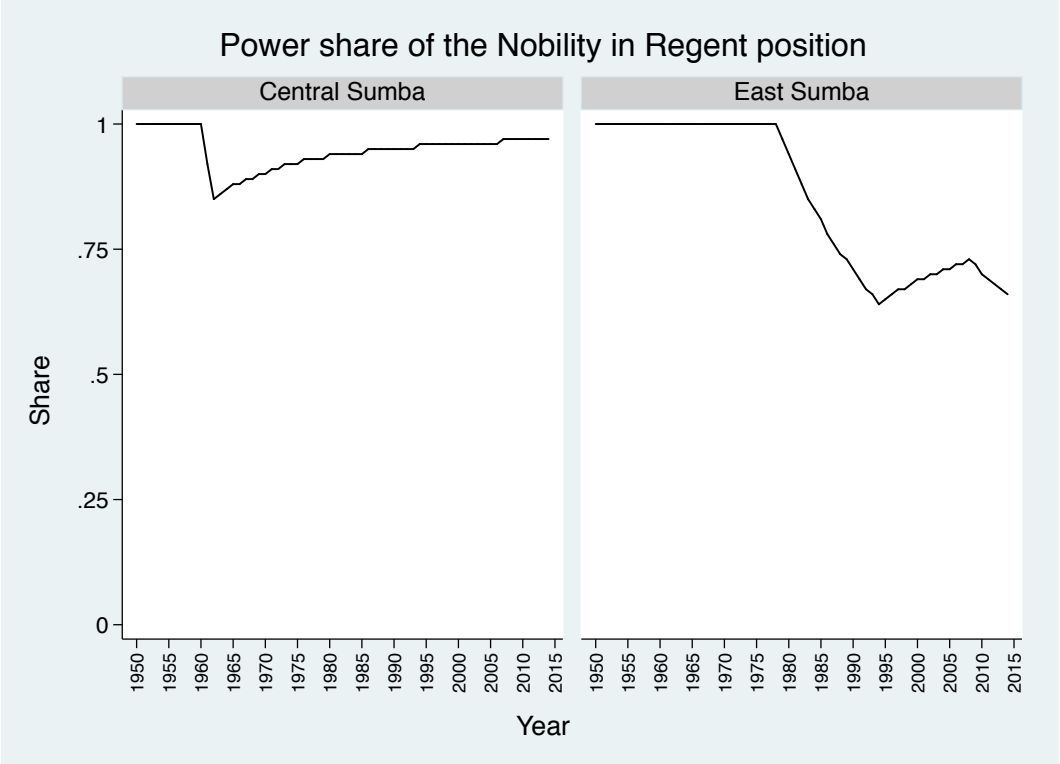

Figure 2.7. Cumulative power share of the Nobility in regency government since 1950
Source: authors' analysis from various government sources

Note: in 1950 the leader is a nobility. A flat slope indicates the continuation of leadership by the nobility. A decrease in the downward slope indicates a leadership shift towards commoners. An upward slope suggests the nobility regaining leadership. There is no slave caste individual appointed or elected as Regent. See subsection 2.3 for variable construction.

The power share at the village level is more dynamic than the district one (see Figure 2.8). Out of 23 villages covered in this study, nobility always leads eight villages, commoners dominate four, and there is some transfer of leadership back and forth between the nobility and commoners in 11 villages. However, it is worth noting that the government appointment of the village head is still the authority of the Regent. The Regent appointed the village government head directly until 2004. And, even under a popular vote mechanism that has been implemented since 2004, the Regent still has the authority to invalidate the popular voting results and appoint an ad-hoc village government head.

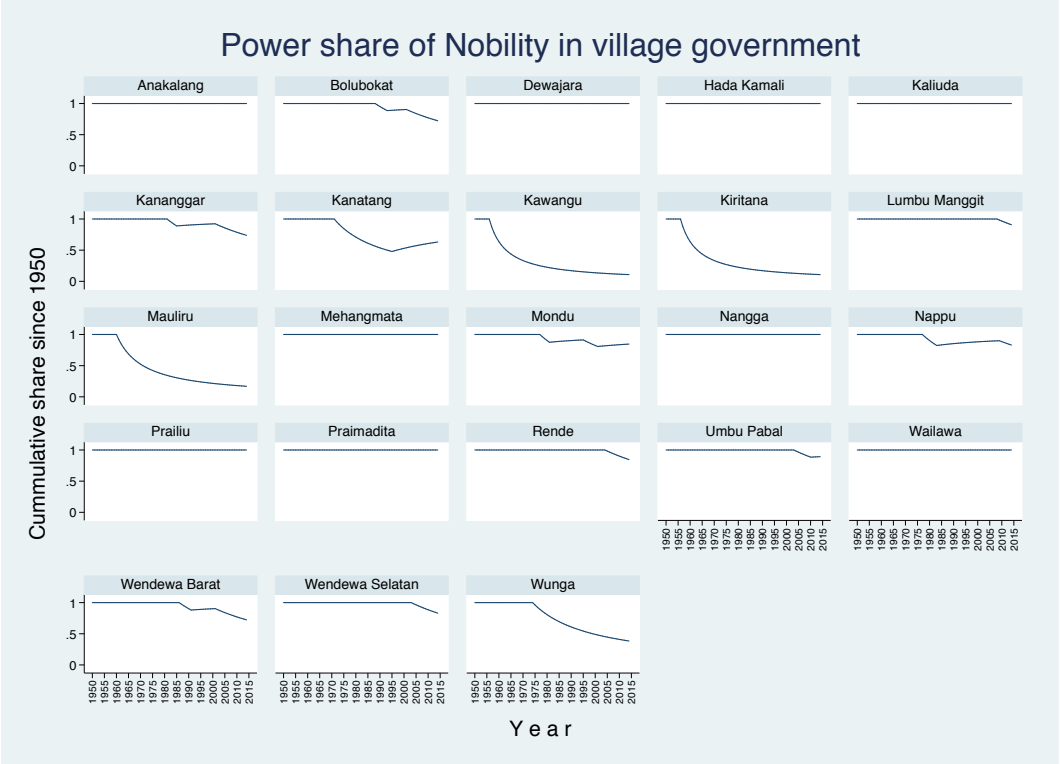

Figure 2.8. Cumulative power share the Nobility in village government since 1950
Source: authors' analysis from various government sources

Note: in 1950 the leader is a Noble. A flat slope indicates a continuation of Nobility reign. A decreased downward slope suggests a leadership shift to the commoner. An upward slope indicates a leadership shift back to the nobility. There is one case where a slave caste individual was appointed as village government head. See subsection 2.3 for the variable construction.

It is clear that the *de facto* power sharing in the village and district level is between the nobility and the commoners. Except for one case where a member of the slave rank was instated as village head on behalf of his master, the slave rank remains in the background, probably because most of its members are still attached to the houses of the nobility caste and therefore do not have the freedom to compete for leadership in local government. The virtual absence of the slave rank in the local political leadership may contribute to their economic deprivation that is manifested by lower development outcomes.

Overall, with regard to the dimensions of power in government, the caste power share in village and district government is still dominated by the nobility. On an individual level, estimated by the power share of the nobility at age seven, on average the noble individuals in our sample grew up with 97.8 percent of the power at village level, and 88.6 percent at district level. The correlation coefficient between the power-share of the nobility in village and district

government is high and positive. As they swing together in the same direction, statistically speaking these two variables of nobility power-share can substitute one another; although, economically speaking, power in district government is more important because up until 2015 all central government funding enters the village via the district government treasury. Furthermore, the correlation coefficient between being a noble and the nobility caste power share in village and district government are both high and positive, both higher than +0.9. We interpret this situation as meaning the power in government is in the grip of the nobility.

2.5.3. Inter-caste gap in Years of Schooling

When the difference in mean year of schooling is used to represent the gap in educational attainment, the results suggest that the nobility have an educational advantage over the commoners and slaves. Table 2.3 presents estimates of the inter-caste gap in years of schooling. Column (1) with OLS subtitles show the results that hold for the overall population, while the columns with FE subtitles are the ones that confine the comparison to within clan and age. Results in columns (2), (3) and (4) are derived from Equation [2.1] and present primary results for the slavery status gap in YOS. Results in columns (5), (6) and (7) are derived from Equation [2.2] which aims to estimate the impact of the nobility's power share on log YOS.

Before interpreting the primary results, it is worth checking if the signs of the covariates are reasonable. First, the signs of most of the age and birth clan dummies are statistically significant, indicating that there is a heterogeneous impact across age and clan; employing the age and clan fixed effect is essential. In all the specifications, years of schooling rises in in accordance with mother's educational attainment once the mother has a Year 9 or higher level of education. The greater the school density, the higher the YOS, which is consistent with our prediction that higher school density reduces cost of schooling, and therefore increases average years of schooling in a clan's traditional domain. Moreover, being female is associated with a 4.0 to 4.7 percent higher YOS than being male. This female advantage is exceptionally high among the nobility where the average YOS is 9.5 years for the female versus 9.3 years for the male. But, the young girl advantage does not apply to the commoner and the slave castes. Similar female advantage phenomena have previously been documented among the free but low-caste children from slum areas of Bombay, India (Munshi and Rosenzweig, 2006). So, it seems that in a lesser educated population, girls tend to strive more for education than boys do, but in Sumba, this only occurs among the freest sub-set of the people that is the noble caste.

For the overall population, the nobility class has 6.4 higher years of schooling than the slave class. In column (3) with exogenous covariates, the gap drops by a small percentage to 0 4.8 years of schooling. In column (4), adding the mother's educational attainment changes the gap to 6.1 years of schooling. Although there is a slight point estimation difference between the OLS with and multi-level fixed effect results, they are similar in their distributions. Indeed, comparing distributions of the coefficients for nobility in columns (2), (3), and (4), they are statistically similar. This result indicates that although one's YOS increases in proportion to one's mother's education, and gender and school density have a significant effect on one's YOS, the size of the inter-caste gap between nobility versus slave is not conditional on gender, school density, age, mother's education, or natal clan. These results imply that the gap seems to be induced by something bigger than individual and parental (mother) characteristics. In this case, we will later examine if the institutional factor that is power holding of the nobility in both the district and village level government is the main determinant for the gap.

The inter-caste gap in years of schooling between the nobility and commoners is lower than the gap between the nobility and slaves. The nobility has around 4.10 to 5.12 higher years of schooling than the commoner, and this gap is not conditional on the individual and maternal characteristics, as well as age and birth clan fixed effects. So, there is a similarity in features to the persistence of a gap between the nobility and slaves. We will further examine the role nobility power holding plays in determining this gap.

Meanwhile, the inter-caste gap in years of schooling between the commoner and slave tells a different story. The gap is 0.7 to 1.3 years of schooling to the advantage of the commoner. Magnitude wise, this is only one-third of the gap between the nobility and slaves. Interestingly, the gap is partially conditional on the mother's education, gender, school density, age, and natal clan. If we compare column (2) and column (3) or (4), controlling for gender, school density, mother's education with age and clan fixed effect strategy, the gap drops by almost half. So it seems that the gap is partially determined by endogenous factors (individual and parental variables) while institutional factors define the rest of the gap. For example, because the commoner caste has gained around 10 percent of the power share in district government, they can maintain a small lead over the slave.

Table 2.3. Inter-caste gaps in (log) Years of Schooling

	Equation [1]			*Equation [2]*		
Independent variables:	*Basic model* ***OLS***	*Exogenous covariates* ***FE***	*Mother's Education* ***FE***	*Power at Village* ***FE***	*Power at District* ***FE***	*Power Weighted* ***FE***
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Caste (Ref. Slave):						
Nobility (N)	0.510**	0.491***	0.499***	0.448**	-0.0931	-0.0620
	(0.0134)	(0.0154)	(0.0175)	(0.178)	(0.0897)	(0.128)
Commoner (C)	0.174**	0.0935***	0.0998***	0.426***	-0.269***	0.466***
	(0.0136)	(0.0145)	(0.0150)	(0.0532)	(0.0881)	(0.0784)
Female		0.0470***	0.0415***	0.0403***	0.0470***	0.0416***
		(0.00940)	(0.00941)	(0.00934)	(0.00945)	(0.00935)
School density (x 100)		0.0140*	0.0153**	0.0264***	0.0504***	0.0775***
		(0.00753)	(0.00749)	(0.00730)	(0.00956)	(0.00789)
Mother's highest educational						
Year 6			-0.0423***	-0.0424***	-0.0320***	-
			(0.0114)	(0.0113)	(0.0114)	(0.0113)
Year 9			0.262***	0.250***	0.261***	0.246***
			(0.0249)	(0.0247)	(0.0250)	(0.0249)
Year 12			0.315***	0.269***	0.321***	0.282***
			(0.0427)	(0.0410)	(0.0431)	(0.0404)
University degree			0.908***	0.496***	0.934***	0.571***
			(0.0464)	(0.0452)	(0.0372)	(0.0429)
Nobility's power share in village government at age 7 (PNV7); Ref.				0.801***		
				(0.0483)		
Nobility x PNV7				0.00785		
				(0.181)		
Commoner x PNV7				-0.381***		
				(0.0570)		
Nobility's power share in district government at age 7 (PND7); Ref:					0.222**	
					(0.106)	
Nobility x PND7					0.664***	
					(0.101)	
Commoner x PND7					0.415***	
					(0.102)	
Combined Nobility's power share in village and district at age 7 (PNW7);						1.352***
						(0.0829)
Nobility x PNW7						0.559***
						(0.138)
Commoner x PNW7						-0.437***
						(0.0875)
Age FE	No	Yes	Yes	Yes	Yes	Yes
Clan FE	No	Yes	Yes	Yes	Yes	Yes
Constant	1.618**	1.672***	1.647***	0.885***	1.323***	0.233**
	(0.0110)	(0.0436)	(0.0437)	(0.0603)	(0.119)	(0.0922)
N	1414	1414	1414	1414	1414	1414
Adj. R-square	0.078	0.221	0.229	0.241	0.233	0.235
OVERALL GAP						
Nobility vs. Slave	0.510**	0.491***	0.499***	0.455***	0.487***	0.435***
	(0.0134)	(0.0154)	(0.0175)	(0.022)	(0.0174)	0.0178
Commoner vs. Slave	0.174**	0.0935***	0.0998***	0.082***	0.093***	0.0770***
	(0.0136)	(0.0145)	(0.0150)	(0.0148)	(0.0151)	(0.0150)
Nobility vs. Commoner	0.336**	0.397***	0.399***	0.374***	0.394***	0.358***
	(0.0111)	(0.0114)	(0.0125)	(0.0181)	(0.0126)	(0.0128)

Source: Authors' analysis from 2015 Residential Survey. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01. Note: Except for the residential in Anakalang clan, all other residentials still practice strict indigenous religion (the local term is *Marapu*) where each caste performs specific roles in religious ritual and funeral. This difference is absorbed by Natal Clan Fixed Effect.

Comparing these three sets of results, it is likely that the gaps in YOS between nobility and slave as well as between nobility and commoner persist despite the upward trends in years of schooling for the younger cohort of the three castes. Meanwhile, the inter-caste gap in YOS between commoner and slave is not stubborn and can be reduced with specifically related policy, for example, related to school density or gender-sensitive programs.

Now we will examine the contribution of the nobility's power share to the inter-caste gap in years of schooling. The results are presented in columns (5), (6) and (7) of Table 2.3. Recall that although the nobility has lost some power share, on average it dominated the power share both at village and district levels when the individuals in the regression were seven years of age. At that time, the commoner holds only around 10 percent of the power share, while the slave virtually does not hold any.

First, let's examine the impact of the decrease in the nobility's power share at village and district levels on the YOS gap between nobility and slave. The overall effect or gap is a bit bigger, but the nobility maintains a high and positive lead. This possibly implies that the inclusion of the power variable and its interaction terms absorb some (in column 5) to all (in column 6 and 7) of the nobility's lead, and the power variable is the subset of the nobility variable. Put differently, the power in government is the channel through which the nobility gain their lead in human capital investment, in this case in years of schooling.

The inclusion of the nobility's power share in village government (see column 5) reduces the magnitude of the nobility variable by 5.1% while providing a dynamic change for the reference group, the slave caste. A 10% increase (decrease) in power of the nobility in village government is associated with an 8.01% increase (decrease) in the YOS of the slave caste. Meanwhile, on average, the nobility caste does not experience an increase or decrease in YOS gap compared with the slave caste, if the change in the nobility's power share in village government is considered. In another words, the average education level of the nobility caste is indifferent to their power holding in village government. So, from where does the nobility caste gain their lead in education level?

To answer the above question, we examine the impact of the nobility's power share in district government on the nobility and slave gap in YOS. As can be seen in column 6, the inclusion of the nobility's power share in the district into the estimation resulted in the nullification of the nobility variable. In another word, the power share variable absorbs the whole YOS gap between the commoner and the slave castes. Or, the nobility's power share at the district level is the entire source for the nobility's educational advantage over the slave caste. A 10% increase (decrease) in the nobility's power share at district government level increases (decreases) the level of YOS of the slave by 2.22% but increases (decreases) the YOS gap between nobility and slave by 6.64%, about threefold the percentage increase (decrease) in YOS of the slave.

If we treat the power share in village and district government as equally important, the insight that the nobility's power share in government is the determining factor for their lead in educational attainment over the slave is still valid. As seen in column 7 of Table 2.3, the magnitude of the nobility variable is statistically zero, as its value is absorbed by the nobility's power share variable and its interaction with caste variables. A 10% increase (decrease) in the nobility's power share at district and village government increases (decreases) the level of YOS of the slave by 13.52% while at the same time increases (decreases) the YOS gap between nobility and slave by 5.59%.

Meanwhile, an increase (decrease) in the nobility's power share at district and village government combined causes an opposite move in the YOS gap between the commoner and the reference group, the slave caste. Because the nobility and commoner compete head-to-head for power in the local government entities, a 10% decrease in the nobility's power share at district and village government combined is equal to a 10% increase in the power share of the commoner, and vice versa. So, a decrease in the power of the nobility should place the commoner in an advantaged position. The estimation shows that a 10% decrease in the combined power share of the nobility or a 10% increase in the combined commoner power share increases the lead of the commoner over the slave by 4.37%. And because at the same time the nobility lead in YOS decreases, the loss of power by the nobility to the commoner helps the commoner to narrow its YOS gap with the nobility as well.

What is clear from the estimation results is that compositely the nobility's power is firstly good for the YOS of the nobility themselves, and to a lesser extent good for the YOS of the direct subject that is the slave caste. However, as expected, the nobility's power share is bad for the

YOS of their direct power competitor that is the commoner. Why does the slave caste benefit more from the ruling of their master rather than from the ruling of the commoner? The possible answer lies in the 'carrot and stick' strategy used to maintain and make the slavery system profitable (Findlay, 1975; Lagerlof, 2009), and the lesser of two evils principle (for example Dell, 2010). The carrot part of the slavery system provides some opportunity for a certain percentage of slaves to be educated formally, and if they do not run away, this is good for the profitability of the slavery system due to an increase in human capital that leads to higher productivity. So, there is an incentive for the nobility to invest their resources in the education of their slaves, although the level of education provided by masters for their slaves is low. Moreover, it seems that in Sumba's slavery system, the ruling nobility is the lesser of two evils compared to the ruling commoner. This is because the nobility and their slaves are in the production system and they 'complement' each other, so the nobility will prioritize the demand for labor from his own slaves' labor supply rather than from the commoner's labor supply. This puts the slave and commoner in competition for the supply of labor to the nobility's controlled production system. Meanwhile, at the top of the power pyramid, the commoner competes head-to-head against the nobility. Therefore, the ruling commoner will only prefer to benefit his group and not the slave who competes against the commoner for the supply of labor, as well as not their noble master who competes head-to-head with the commoner for power.

2.5.4. Inter-class gap in Body Height

We use the difference in mean body height to proxy for the gap in long-term nutrition status from the fetus period up to the end of adolescence when growth stops. Table 2.4 presents estimates of the inter-caste gap in the log of body height. Column (2) with OLS subtitles show the results that hold for the overall population, while the columns with FE subtitles are the ones that confine the comparison to within birth clan and age. Results in columns (2), (3) and (4) are derived from Equation [2.1] and present primary results for the caste gap in body height. Results in columns (5), (6) and (7) are derived from Equation [2.2] that intends to estimate the impact of the nobility's power share on the caste's level and inter-caste gaps in log body height.

The estimation results in Table 2.4 show that although for the overall population the nobility and commoners have a 3.5 and 4.0 centimeters higher body height than the slave, respectively (column 2 in Table 2.4), it turns out that this small height-advantage of the nobility and commoner adults drops significantly once differences in gender, age, clan and mother's education are included in the equation (column 2 and 3 in Table 2.4).

Table 2.4. The inter-caste gap in Log Body Height

Independent variables:	Equation [2.1]			Equation [2.2]		
	Basic model	*Exogenous covariates*	*Mother's Education*	*Power at Village*	*Power at District*	*Power Weighted*
	OLS	***FE***	***FE***	***FE***	***FE***	***FE***
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Caste (Ref. Slave)						
Nobility (N)	0.022**	0.013***	0.008***	0.101***	-0.012	0.009
	(0.00275	(0.00197)	(0.00234)	(0.0170)	(0.0271)	(0.0310)
Commoner (C)	0.025**	0.006***	0.005**	0.038***	-0.054**	0.041***
	(0.00257	(0.00179)	(0.00183)	(0.007)	(0.0221)	(0.0148)
Female		-0.0772***	-0.08***	-0.078***	-0.077***	-0.077***
		(0.00157)	(0.00156)	(0.00155)	(0.00158)	(0.00157)
Mother's highest educational attainment						
Year 6			0.004*	0.004*	0.007***	0.004**
			(0.00198)	(0.00199)	(0.00200)	(0.00198)
Year 9			0.03***	0.030***	0.032***	0.30***
			(0.00490)	(0.00496)	(0.00501)	(0.00496)
Year 12			0.002	-0.002	0.00200	-0.002
			(0.00344)	(0.00351)	(0.00324)	(0.00353)
University degree			0.110***	0.092***	0.117***	0.090***
			(0.00649)	(0.00615)	(0.00712)	(0.00671)
Nobility's power share in village government at age 7 (PNV7)				0.0509**		
				(0.00929)		
Nobility x PNV7				-0.100***		
				(0.0178)		
Commoner x PNV7				-		
				(0.00855)		
Nobility's power share in district government at age 7 (PND7)					0.0684***	
					(0.0229)	
Nobility x PND7					0.0218	
					(0.0290)	
Commoner x PND7					0.0646***	
					(0.0241)	
Combined Nobility power share in village and district at age 7 (PNW7), Ref. Slave						0.102***
						(0.0192)
Nobility x PNW7						-0.00438
						(0.0327)
Commoner x PNW7						-0.0420**
						(0.0169)
Age FE	No	Yes	Yes	Yes	Yes	Yes
Clan FE	No	Yes	Yes	Yes	Yes	Yes
Constant	5.043**	4.953***	4.954***	4.913***	4.896***	4.868***
	(0.00229	(0.0249)	(0.0249)	(0.0306)	(0.0409)	(0.0380)
N	621	621	621	621	621	621
Adj. R-squared	0.010	0.285	0.288	0.293	0.293	0.292
OVERALL GAP						
Nobility vs. Slave	0.022**	0.013***	0.008***	0.012***	0.008***	0.005*
	(0.00275	(0.00197)	(0.00234)	(0.002612	(0.002328	(0.00287)
Commoner vs. Slave	0.025**	0.006***	0.005**	0.002	0.004**	0.003
	(0.00257	(0.00179)	(0.00183)	(.0019002	(0.00183)	(.0018759)
Nobility vs. Commoner	-0.004*	0.006***	0.004*	0.010***	0.004***	0.002
	(.001918	(.0016998)	(.0018933)	(0.00232)	(0.001855	(0.00254)

Source: Authors' analysis from 2015 Residential Survey. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01

These drops in magnitude imply that the small gaps we see in the population are mainly due to differences in gender, mother's education, age, and clan. As seen in column (3), once these covariates are considered, the height advantage of the nobility over slave drops from 3.5 centimeters to 1.3 centimeters, while the height advantage of the commoner over the slave drops from 4.0 percent to 0.7 percent. Apparently, more than half the gaps in the population are due to differences in individual and parental characteristics.

The inclusion of the nobility's power share at the village level boosts the level of body height of the slave but reduces the gaps in body height between the nobility and the slave caste, as well as between the commoner and the slave caste, to the point that the remaining body height advantage of the commoner disappears (see bottom part of the table). Meanwhile, the inclusion of the nobility's power share at the district level indicates that their power is the channel through which the nobility boosts their investment in nutrition such that they maintain a tiny (1.3 cms) advantage in body height (see bottom part of the Table 2.4).

Further inclusion of the nobility's power share at village and district levels combined resulted in a smaller (0.8 cms) overall advantage in body height for the nobility. Again, the estimation results show that the power to body height dynamic across all castes indicates that power at the district level or its combination with power at the village level are the channels for the lead in the nobility's body height.

Nevertheless, the relationship between the nobility's power share and the inter-caste gaps in body height as the proxy for long-term nutritional status is not as straightforward as in the case of inter-caste gaps in YOS. One possible explanation for the small gaps in body height between the ruling nobility and the slave caste is that the nobility could not easily control the nutritional intake of the slave caste such that they cannot discriminate over what the slave can eat. The other possible explanation is that the nobility does not intend to deprive the slave of their nutritional intake. According to the model of Findlay (1975) and Lagerlof (2009), it is in the interest of the nobility that they have healthy slaves working in their fields so the slave-master will invest in the nutrition and health of their slave. A healthy slave could turn into a more productive kind of 'capital' and give rise to the profitability of the production system that disproportionately benefits the nobility caste. In fact, in Sumba's slavery system it is the slave caste that cooks for noble households, and the slave (cook) determines their food portions. In addition to that, usually, the nobility will leave half their portion to be eaten by their slaves.

Moreover, it is considered the obligation of the nobility to feed their slaves well and take care of their basic health, which is part of the 'carrot' strategy in maintaining a productive slavery system.

Some similar features in the relationship between the nobility's power share and YOS and between the nobility's power share and YOS body height are that: (1) the slave caste benefits from the ruling nobility (the nobility is the lesser of two evils), and (2) the commoner is deprived by the ruling nobility, and (3) the ruling commoner tends not to benefit the slave caste (the worse of two evils).

There is the possibility that the low gap in body height could mask the real intention of the nobility to suppress the level of education of the slaves to keep them in the slavery-based production system that disproportionately benefits the nobility, at a cost to the broader development outcomes of the slave caste—therefore intentionally prolonging the inequality of outcomes within the indigenous Sumba population. Unfortunately for the slave caste, the alternative ruling group that is the commoners, is the worse of two evils. So, under the business as usual scenario, neither the ruling nobility nor the ruling commoner will support the human capital development of the slave caste to the point that equality of opportunity is widely fostered.

2.6 Concluding Remarks

Economists have long hypothesized that the institution of slavery asymmetrically benefits the powerful slaveowners by depriving the powerless slaves of their opportunity for development. However, the oldest form of slavery that is indigenous slavery that persists in some part of the world have been overlooked in economics research and public discussion on equality of opportunity, partly due to it is being masked as an indigenous culture. This paper explores the practice of indigenous slavery in Indonesia's island of Sumba and seeks to explain the role of power share in the local government play in inducing versus preventing gaps in human capital. The institution of slavery organizes society into three hereditary ranks from the highest to the lowest: *Maramba* (nobility, slave master), *tau Kabihu (*commoner), and *tau Ata* (slave). The nobility was the initial power holder in local government and still is the dominant power holder. The commoner has competed head-to-head for power against the nobility, while the slave caste stays in the background.

Against this background, this paper attempts to provide empirical evidence on the impact of indigenous slavery on the inter-caste gaps in years of education and body height between the power dominant nobility caste versus the powerless slave caste and the alternative ruling group that is the commoner caste. Employing a multi-level fixed effect estimation strategy on individual-level data we collected during the 2015 Residential survey on the island of Sumba, we found that the nobility has an enormous lead in years of schooling but only a small lead in body height over the commoner caste and the slave caste. Confirming the power, opportunity and outcome pathways, the nobility's power in district government or in combination with its power share in village government thoroughly explains the gaps in human capital between the nobility and slave caste. Interestingly, and in line with the finding of Dell (2010), the noble caste has become the lesser of two evils for the slave caste by benefitting their human capital while depriving their direct power competitor and substitute, the commoner, their human capital advancement. In return, in addition to seizing the power share from the nobility, the ruling commoner is the worse of two evils for the slave caste by disallowing advancement in human capital gain for the slave caste when they hold power. Therefore, under business as usual, despite the unequal opportunity it creates, living under the protection of the nobility seems to be the best strategy for the slave caste. In the future, this strategy will cause a persistent inequality of opportunity within the slavery practicing society in Sumba that will end up with a stubborn trend in inter-caste gaps in human capital and high poverty for the subject caste that is, the slaves.

One possible scenario to foster equality of opportunity for the commoner and slave castes in Sumba would be to induce a political shock that is big enough to enable the slave caste to compete in government leadership at the village and district level. Among others, the possible political shocks could include the introduction of slavery abolition acts, reservation policy for the lower caste, and democratization. Given that majority of the nobility individuals have converted to Christianity, a successful slavery abolition effort introduced through church like the one among the Batak Christians in 1859 (Singarimbun, 1975; Bemmelen, 2018) is a viable option. Simultaneously, a slavery abolition act introduced by the state, like the one in the United States in 1865 (Wiecek, 1978) should become available to guarantee individual freedom for the slave individuals.

Finally, local democratization that provide space for the slave caste to compete for leadership position need to be carved and boosted. While power reversal has a long way to go in Sumba, the lesson learnt from the case of reversal of power in Bali (see Chapter 3 of this thesis), social engineering to meet the necessary conditions for such successful entry of the slave caste into the political arena needs to be carved carefully. Among other things, expanded research needs to be done to understand if there are embryonic efforts for slavery abolition; why the slave caste seems to prefer to stay under the wings of their noble masters, and why they do not want to participate actively in competing for political leadership on the island of Sumba.

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APPENDIX

Appendix 2.1. Cross-tabulation of Caste and Occupation of sample and of their mothers

A. Caste and Occupation of Sample

		Main occupation category		
Caste		Traditional	Non-traditional	Total
Nobility	N	414	116	530
	%	78.11	21.89	100
Commoner	N	401	33	434
	%	92.4	7.6	100
Slave	N	412	38	450
	%	91.56	8.44	100
Total	N	1,227	187	1,414
	%	86.78	13.22	100

B. Caste and Occupation of their Mothers (during Respondents childhood period)

		Main occupation category		
Caste		Traditional	Non-traditional	Total
Nobility	N	519	11	530
	%	97.92	2.08	100
Commoner	N	430	4	434
	%	99.08	0.92	100
Slave	N	442	8	450
	%	98.22	1.78	100
Total	N	1,391	23	1,414
	%	98.37	1.63	100

Source: Authors' analysis from 2015 Residential Survey

Note: Traditional sector includes homemaker, agriculture labor, and weaver. Those occupations are common under indigenous slavery in Sumba. Slave caste takes manual labor position while nobility caste takes the managerial position; commoner caste's position is flexible. Non-traditional sector covers trading, mechanic, and government jobs.

Chapter 3. Inter-caste Reversal of Power and Gaps in Development Outcomes: Evidence from Bali, Indonesia

3.1. Introduction

The persistent high caste hegemony in preserving inter-caste gaps of development opportunity and outcomes has generated significant debate in recent decades. On the one hand, the blocked-by-caste camp argues that the first preference of the upper caste is to accumulate wealth at the cost of the development of the lower caste. Therefore, without eliminating high caste hegemony, there is persistent inter-caste inequality of opportunity that impedes convergence of development outcomes across castes in educational attainment and income (Mosse, 2010; Thorat & Newman, 2010). On the other hand, the convergence-across-castes camp argues that caste convergence can be established through affirmative action in political representation, education, and jobs, like the ongoing Indian and Nepali reservation systems for disadvantaged caste and tribes, that furnishes a way to transform the economy structurally from a less to a more skills-intensive one (Munshi, 2010; Hnatkovska & Lahiri, 2013). Notwithstanding its policy importance, empirical support on whether inter-caste shift of power reduces inequality of opportunity and development outcomes is limited in the South Asian context.

This study intends to contribute to the literature by examining a case of inter-caste reversal of power from outside South Asian caste system. The case we examine is the power takeover by the peasant caste (*Jaba*) from the high caste (*Triwangsa*) triggered by an exogenous political shock in 1965 in the island of Bali, Indonesia. The map of Bali and its location in Indonesia is presented in Figure 3.1. For centuries until 1965, the peasant caste was the subject of the high caste and being the ruling group, the high caste was privileged in government positions, labor markets, and schooling. However, in 1965, for the first time in centuries and against caste norms, the peasant caste replaced their former master from the regent positions.

Figure 3.1. Map of Bali and Its Location in Indonesia

A disruptive change such as this could reset the trajectory for distributive policies to alter inter-caste gaps in development opportunity and outcomes. This power takeover paved the way for a reversal of power where the traditionally subject caste, the peasant caste, ruled over the districts in the island of Bali. Given this power dynamic, there are two interrelated questions that we want to examine. First, does the reversal of power reduce inter-caste gaps in human capital acquisition measured in years of schooling and, if yes, by how much? Secondly, how much of an inter-caste gap in broader development outcomes (i.e., years of schooling, wages, business income, and household consumption) remains four decades after the initiation of the reversal of power?

Because the caste category of an individual is a random event that is exogenous to one's education, wages, business income, and household consumption, we directly employ an OLS estimation strategy with district and age fixed effects to quantify inter-caste gaps. Our development outcomes data comes from Indonesia's 2002 Socioeconomic Survey dataset. Meanwhile, the data on caste power share is computed based on Bali regent administrative data. The power share is a continuous variable with a value of 1 in 1950[9], decreasing proportionally for every regent-year that the high caste loses to the peasant caste.

Our estimation results show that the reduction in the power share of the high caste has disproportionately benefited the new ruling caste (i.e., the peasant caste) their human capital acquisition. The elasticity between reduction in power share of the high caste and inter-caste gap in years of schooling is high; it is 1.14. This magnitude implies that a 10 percent shift of power to the peasant caste reduces the inter-caste gap in the human capital acquisition by 11.4 percent. Approximately, if this linear trend continues, a full reversal of power can reverse the inter-caste gap in years of schooling to the advantage of the peasant caste. In 2002 when the peasant caste holds 6 out of 9 regent positions in Bali, the already small gap in human capital acquisition factors into the elimination of the inter-caste gap in wages and reduction of the inter-caste gaps in business income and consumption. Comparatively, the impact of the 37-year inter-caste power reversal in Bali on reducing inter-caste gap in years of schooling is stronger than that from the 60-year reservation policy in India (Hnatkovska, Lahiri & Paul, 2012; 2013).

Our contributions are threefold. First, to the best of our knowledge, this is the first study that provides empirical evidence of the magnitude of gaps in development outcomes after the inter-caste reversal of power took place. Second, we jointly analyze years of schooling, wages, business income, and consumption so we can pinpoint the direction of change from educational attainment to the other outcomes that can represent broader returns from education. In this sense, we cover more development outcome variables than the ones in Hnatkovska, Lahiri & Paul (2012). Thirdly, in the Indonesian research context, this is the first quantitative study that considers the impact of inter-caste political power on development outcomes. Previous studies

[9] 1950 is the *de facto* date for the inclusion of Bali into independent Indonesia nation-state

refer to ethnic, religious or regional differences, without political power attached (for example Suryadarma *et al.*, 2006; Akita and Alisjahbana, 2002; Skoufias, Suryahadi, and Sumarto, 2000).

The rest of the chapter is organized as follow. The next section presents a literature review explaining Bali's caste system and sources of caste-based inequality of opportunity. Section 3 layouts the estimation strategy. Section 4 explains the data sources and construction of caste information. Section 5 presents results and the discussion, followed by the conclusion in Section 6.

3.2. Literature Review

The caste system is a hereditary classification that dictates group expected occupation category throughout his or her lifetime. The classification is set to serve the division of labor where the higher one's caste strata, the higher the expected economic benefit he or she gains from the production system he or she controls. The caste system was practiced worldwide across ethnic and religious groups (Weber, 1958) but a series of political and economic shocks eliminated the system in some places. Current literature on the economics of caste is predominantly on South Asia, thanks to the obligation to collect data on disadvantaged caste and tribes for the monitoring of the reservation policy in India. Among the remaining practicing groups outside South Asia is the Austronesian ethnics of Bali in South Indonesia (Robinson, 1995; Vickers, 2012).

3.2.1. Bali's Caste System

The ancient Austronesian Bali's caste system orders society into two big groups: the high *(Triwangsa)* and low *(Jaba)* castes. Traditionally, the high caste is subdivided into two subclasses: the priest class who control intangible resources such as religious knowledge and rituals, and the aristocracy class who control tangible economic production factors such as land and capital. In this setting, the low caste or peasant caste contribute their labor in the economy controlled by the high caste. This production system fits well the model of division of ownership of factors of production by Acemoglu and Robinson (2005). With the arrival of Hinduism in Bali, the caste categories underwent Sanskritisation in which the priest class

equates *Brahmana*, the aristocracy class equates *Ksatria*, and the peasant class equates *Sudra* (Dwipayana, 2001; Reuter, 2002). Both the Bali and Sanskrit terms of classification are still used interchangeably. There is no certainty on the presence of an equivalent of Indian trader caste, *Weisya*, most likely because during the Sanskritisation the Balinese did not have vibrant trading or merchant professions.

Balinese caste identities are controlled according to a rigid naming system. Following the Austronesian custom, the Balinese high caste maintains honorific titles that now function as caste marker, while their peasant caste counterpart does not have one. For example, these titles are *Ida Bagus* and *Ida Ayu* for male and female *Brahmana*, respectively; *Dewa, Cokorda, Anak Agung, Gusti, Jero,* and *Desak* (female) for *Ksatria* (Boon, 1973; Phalgunadi, 1991; Wiana and Santeri, 1993; Robinson, 1995; Dwipayana, 2001; Karepun, 2004).

In comparison, the Bali caste identification system differs from that in India system. In India system, the caste marker is in the surname that indicates one's expected economic profession or *jati*. Another different feature of the Bali caste system is that it does not adequately enforce caste endogamous marriage; it allows women to marry up but not marry down (Cahyaningtyas, 2016; Limarandani, Sihabudin, and Ronda, 2018). In the past, the latter is punishable by death, but in modern Bali, the punishment is more in the form of social rejection such as losing the high caste title and its associated privilege. This feature of caste exogamous marriage between high caste male and low caste female is not allowed in India caste system. Therefore, in terms of endogamous marriage, the Bali caste system can be considered softer than the India caste system.

3.2.2. Origins of High Caste Advantages in Human Capital Acquisition

The literature of the economics of caste is predominantly in South Asia. The literature on origins for high caste advantages in human capital acquisition in South Asia can be classified into three groups of causes: preference of the ruling caste, and the ability of the high caste to discriminate its opponent.

Preference of the Ruling Caste

The original form of caste economy can be classified as a variant of the production system with division of ownership of factors of production of Acemoglu and Johnson (2005) without an option for upward or downward mobility. This type of economic activities disproportionally benefits the ruling caste their income, leaving the different caste in low-income equilibrium. The income gap factors into gaps in demand for schooling for the younger cohort and hence creates gaps in educational outcomes that force the low caste stays in low paying occupations. Therefore, the preference of the high caste is to maintain differences in occupation and income between the castes.

This economic preference is sustained by a belief system in which the mixing of low caste and high caste individuals pollutes the high caste and is not good for the society at large. For instance, the exhibit of India Constitution 1950 (Pande, 2003; Munshi, 2016) uses the same principle to determine which low caste eligible for reservation policy in public school and university admission, government jobs, and political representation. As presented by Pande (2003), they are those who according to the high-caste controlled belief system:

- Cannot be served by clean Brahmans
- Cannot be served by the barbers, water-carriers, tailors, etc. who serve the caste Hindus
- Pollutes a high-caste Hindu by contact or by proximity
- Is one from whose hands a caste Hindu cannot take water
- Is debarred from using public amenities such as roads, ferries, wells, or schools
- Will not be treated as an equal by high-caste men of the same educational qualification in ordinary social intercourse
- Is depressed on account of the occupation followed and, but for that, occupation would be subject to no social disability

The belief system can also directly restrict the learning opportunity for the low caste. For instance, on the relationship between caste and literacy, if the orthodox teaching is followed literally, the peasant caste *(Sudra)* is confronted with restrictions in access to educational services. One of the teachings in *The Gautama Dharma Sutra (Chapter 12, verses 4-6, in Hola, 2007)* states

> Now if a Sudra listens intentionally to (a recitation of) the Veda, his ears shall be filled with (molten) tin or lac.
>
> If a Sudra recites (Vedic) texts, his tongue shall be cut out. If he remembers them, his body shall be split in twain.

This teaching implies that the Sudra should not be allowed to assume the role of the upper caste in reciting the Veda, the holy book. To be able to recite the holy book, the *Sudra* need to be literate in the first place; but because the activity is detrimental for the society at large, the *Sudra*'s learning process should be restricted. If we extend the notion of learning to encompass general knowledge, we can safely say that the orthodox interpretation of the teaching is that the *Sudra* should be restricted from learning so that they cannot outperform the upper caste in human capital accumulation. Therefore, if this preference of high caste is enforced, we expect to see discrimination against the low caste that resulted in a gap in literacy and educational attainment to the advantages of the high caste.

The ability of the High Caste to Discriminate its Opponent

The abovementioned preference of high caste is a necessary but not sufficient condition for actions of discrimination to occur. Therefore, having the discriminative preference alone does not necessarily translate into actions of discrimination. For the high caste to gain from the discrimination, they should have the political or economic power to discriminate the low caste. Otherwise, if the power is at the hand of the low caste, the dominant low caste will reverse the discrimination and put the powerless high caste in trouble.

Empirical evidence from India indicates that inter-caste discrimination occurs more often in states where the high caste hegemony stretched in politics, economic, and education sectors. The low caste status has become a target for discrimination due to their lack of political and economic power. For example, in education sector, children from low caste background receive an unreasonably bad grade by their high caste teachers (Thorat and Newman, 2010) and in university, they are being harassed by their high caste peers and denied access to proper housing for rent (Neelakantan, 2011). In the rural market for factors of production, farmers of low caste background are denied the opportunity to buy water for their plants (Anderson, 2011). Meanwhile, in the urban labor market, low caste individuals with university graduates face psychological hurdle during a job interview due to their low-caste family background (Deshpande and Newman, 2007). Moreover, those who without higher education face job and wage discrimination due to poor recruitment network (Banarjee and Knight, 1985). Overall, this situation leads to both low human capital acquisition and low income for the low caste, while the high caste enjoys a better performance.

Although India's Constitution in 1950 has made it illegal for caste-based discrimination, law enforcement to punish the perpetrators is rarely implemented. It is likely that, under identity politics (Fukuyama, 2018), the law enforcers are part of or sided with the high caste ruling groups whose preference is to discriminate the low caste their development opportunity.

3.2.3. Drivers for the Decline in Inter-caste Gap in Human Capital Acquisition

The literature on drivers for the decline in high caste advantages in human capital acquisition can be classified into three groups of causes: political shock, economic shock, and shock in school supply.

Political shock

Evidence from India's mandated political representation indicates that the introduction of reservation policy in 1950 change the trajectory of low caste development outcomes. The reservation policy assigns a quota for low caste in the local and national parliament, public school admission, public university admission, and government jobs equal the population share of the low caste in the last population census. The quota can be seen as a political shock that partially curbs the monopoly of the high caste in political representation. Empirical studies show that the increase in political representation of low caste in the political party and parliament increase the public education spending (Pande, 2003), literacy, and educational attainment (Banarjee and Somanathan, 2016) for the benefit of their caste.

Economic Shock

Positive shock in the supply side of the economy can trigger upward mobility for the low caste. Evidence from the diamond industry in India suggests that a sudden increase in the supply of rough diamond worldwide leads to an increase in business opportunity for diamond trading. This opportunity provided momentum for a poor low caste in the supply chain who previously only work on diamond cutting and polishing activities to enter the diamond trading business successfully due to the available basic skills they had had on diamond production. Thanks to the intra-caste strong networks, this effort helped move the poor caste out of low skill occupation traps and close the income gaps with the high castes who are the first movers in diamond trading business (Munski, 2010).

Moreover, evidence from a field experiment on the booming software industry in urban India shows that the industry is more concern about recruiting the best engineers and not the 'best' caste, and hence less likely to perform caste discrimination against software engineers from low caste background in recruitment process (Banarjee *et al.,* 2009). It follows that there is no potential inter-caste gap in wage. In turn, this egalitarian sector trigger demand for software engineering skills from low caste background, hence boosting more capital human capital acquisition among the group.

Both in the case of the diamond trading business and the software industry, the majority of the demand seems to come from international customers who have only quality preference and not caste preference from their suppliers, so the domestic industries do not have the incentive to discriminate the low caste players in the supply side of the equation.

Shock in School Supply

A positive shock in school supply reduce schooling cost and hence trigger demand for schooling from the poor households. In this sense, low caste households are overrepresented among the poor population. Empirical evidence from India shows that Christian missionaries targeted the conversion of the low caste communities through the provision of Christian schools with low fees. This activity helped boost the low caste, who were likely to convert to Christianity, their human capital acquisition. As observed by Banarjee and Somanathan (2016), the Christians whom majority comes from low caste background tends to have a better

education than the average population, although their new religious category could incite another type of discrimination, the religious discrimination, from the majority population.

Another shock in the supply side of India's education sector is the mandated provision of admission in public schools and universities for the low caste students since 1950. Empirical examination on the long-term change in inter-caste educational attainment shows that there is a definite trend for convergence across castes due to the reservation policy in education (Hnatkovska & Lahiri, 2014).

3.3. Estimation Strategy

In the two castes context, i.e., high caste versus peasant caste, the inter-caste gap in a development outcome can be estimated using the equation below:

$$log\ (Y_{id}) = \alpha + \beta Highcaste_i + \theta_d + X'_{id}\pi + \mu_{id} \qquad [3.1]$$

where log(Y_{id}) is the outcome variable of interest for individual *i* in district d; $highcaste_i$ is an indicator equal to 1 if the individual *i* belongs to the high caste and equal to 0 otherwise; θ_d is district fixed effect; X_{id} is a vector of covariates that includes age and sex, and μ_{id} is the error term. β, π, and α are OLS estimators. The outcome variables are years of schooling, wages, business income, and consumption. They enter the equation separately. It is worth noting that we employ the Heckman selection model on first step regression before estimating the impact of caste on log of wages in the second step regression. We have deliberately chosen the log form for the dependent variable to accommodate the fact that the higher the average outcome, the higher the resources needed to increase it.

We limit our sample to those who were born after 1950 and had an age minimum of 25 years in 2002, the time of the Susenas data collection by Statistics Indonesia. This age restriction is essential because at age 25 or more an individual should have completed his or her undergraduate degree if they go all the way through school. Our restriction to those born in 1950 or later is to eliminate the war effect from the sample; Bali underwent the Republican war before 1950.

Assignment into $Highcaste_i$ is random; hence it is entirely exogenous to Y_{id}. Therefore, we perceive β as an unbiased estimator for the inter-caste gap in Y_{id}. The value *(exp$^{\beta}$ - 1)* multiplied by 100 measures the percentage of the average gap in Y_{id} between the high caste and the peasant caste. This gap is positive if the system advantages the high caste in their development outcome. Meanwhile, the gap between high caste and peasant caste equals {100 * *(exp$^{\beta}$ - 1)** $\bar{Y}_{highcaste}$}.

Regarding the district fixed effect strategy, the θ_d is needed to restrict the estimation of the gap within a unit of local government, which is reasonable. This restriction is essential to ensure that the coefficient β is free from the impact of the unchanging feature of the different districts.

One might have concerns about the possible sample selection bias in our dataset. The dataset comes from an administrative survey by the Indonesian Statistical Office who randomly chooses sampling blocks and households based on the most recent Population Census 2000. Sample selection is generally not a problem in a random sampling. However, because the dataset does not force the co-residence of parents and children, we could not include parental education in education regression. In this case, we might have inflated the importance of being a high caste individual because, conceptually, it includes the reinforcing inter-generational impact of caste on an individual's education via parental education.

Another possible concern regards the representativeness of the survey sample for the whole of Bali. To accommodate this concern, we perform all estimations with sample weights for individuals or households from the 2002 SUSENAS, whichever is applicable.

To answer the second question regarding the impact of the reversal of power in reducing inter-caste gaps in years of schooling, we estimate the following equation:

$$log\,(Y_{id}) = \alpha + \beta Highcaste_i + \kappa Power_d^N + \tau Power_d^N * Highcaste_i + \omega \log(School_d) + +\theta_d + X_{id}'\pi + \mu_{id} \quad [3.2]$$

where $Power_d^N$ is the power share of the high caste in district *d* in the year when person *i* is seven years old. Age seven is chosen as the cut-off point because this is the age when a typical Indonesian child enter elementary school. We want the power variable to precede the school outcome that is 0 to 16 years of schooling. A cut-off at older age, for example 13 years when a typical child enter secondary school, will reverse the sequence of power and schooling attainment if the child dropped out of school before reaching age 13. Therefore, it is more reasonable to use the age of enrolment to grade one as cut-off. Meanwhile, $\log(School_d)$ is the log of the number of schools in district *d* in the year when person *i* is seven years old. We restrict the development outcome variable $log\ (Y_{id})$ to log years of schooling only because this is the only variable in which we can directly relate one age, the political power share, and school supply during childhood to his or her years of schooling at or beyond the age of 25.

We define the high caste power share in district *d* in year *t* as:

$$P_{d,t}^N = \frac{\sum_{1950}^{t} G_{d,t}^N}{t-1949} \qquad [3.3]$$

where $G_{d,t}^N = 1$ if the Regent *(Bupati)* of district *k* in year *t* is from the high caste, and zero otherwise. Year 1950 is used as starting point because this is the year that the local government was established by the newly independent Government of Indonesia after a three years Republican war that included wars in Bali. In that initial year, all Regents in Bali were from the high caste.

Numerically, $P_{d,t}^N$ is the total number of years the high caste rule as regent relative to the age of the district (in year) since beginning 1950. The ranges of high caste's power share ($P_{d,t}^N$) is (0,1], where 1 means that the nobility rules continue since 1950. If, after 1950, a commoner is appointed to the Regent position, the value of nobility's power share variable ($P_{d,t}^N$) decreases to below one. This decrease indicates that the other caste has started accumulating power while simultaneously, the nobility has started losing power. We illustrate the computation using the power shift in the districts of Gianyar in Bali, presented in Table 3.1.

Table 3.1. Computation for High caste's power share in district of Gianyar in Bali

Year	Caste of Regent	$G^N_{k,t}$	$\sum_{1950}^{t} G^N_{k,t}$	*t-1949*	$P^N_{d,t}$
1950	High caste	1	1	1	1
1951	High caste	1	2	2	1
1952	High caste	1	3	3	1
1953	High caste	1	4	4	1
1954	High caste	1	5	5	1
1955	High caste	1	6	6	1
1956	High caste	1	7	7	1
1957	High caste	1	8	8	1
1958	High caste	1	9	9	1
1959	High caste	1	10	10	1
1960	High caste	1	11	11	1
1961	High caste	1	12	12	1
1962	High caste	1	13	13	1
1963	High caste	1	14	14	1
1964	High caste	1	15	15	1
1965	Low caste	0	15	16	0.94
1966	Low caste	0	15	17	0.88
1967	Low caste	0	15	18	0.83
1968	Low caste	0	15	19	0.79
1969	Low caste	0	15	20	0.75
1970	High caste	1	16	21	0.76
1971	High caste	1	17	22	0.77
1972	High caste	1	18	23	0.78
1973	High caste	1	19	24	0.79
1974	High caste	1	20	25	0.80
1975	High caste	1	21	26	0.81
1976	High caste	1	22	27	0.81
1977	High caste	1	23	28	0.82
1978	High caste	1	24	29	0.83
1979	High caste	1	25	30	0.83
1980	High caste	1	26	31	0.84
1981	High caste	1	27	32	0.84
1982	High caste	1	28	33	0.85
1983	High caste	1	29	34	0.85
1984	High caste	1	30	35	0.86
1985	High caste	1	31	36	0.86
1986	High caste	1	32	37	0.86
1987	High caste	1	33	38	0.87
1988	High caste	1	34	39	0.87

Source: Author's calculation based on government data

The power share of the high caste started at value 1. In 1951 the Regent was a high caste. Therefore $G^N_{d,1951} = 1$. For 2 years period since 1950, the total length of time the high caste rules the district is two years. Therefore, the high caste power share in 1951 was two years of ruling divided by a two-year time period. The high caste power share was 1. The high caste monopolized power in the district from 1950 to 1964 for 15 years. Therefore, from the year 1950 to in the year 1964, the high caste power share stays at 1.

However, in 1965, the central government appointed a commoner for the Regent position. Therefore $G^N_{d,1965} = 0$. In 1965, for 16 years period since beginning 1950, the total length of time the high caste rules the district was 15 years over 16 years. Therefore, the high caste power share in 1965 was 15 year of ruling divided by 16 years, or 0.94. The commoner stayed at the Regency helmet until 1969. In that year, the high caste rule for 15 years out of 20 years period. The high caste's power share in 1969 was 15 divided by 20, equals 0.75. When a high caste was appointed to Regent's position to replace a commoner in 1970, the high caste has ruled accumulative for 16 years over 21 years period. Their power share increased from 0.75 to 0.76. As the high caste stayed at the Regency helmet in the following years, the high caste's power share keeps increasing.

Recall that in equation [3.2], our central coefficient of interest is τ, the high caste advantage due to their political power. Because the power share in the government leadership position gives rise to access to and control over government money and projects (Mueller, 2003), we expect that the high caste benefits from their power share in the local government. We expect that controlling for the impact of school construction, the additional impact of high caste power share to its group (τ) is positive. In other words, power increases the inter-caste gap in education, to the advantage of the high caste. Conversely, the reduction in the power share of the high caste reverses the signs of the coefficients such that the inter-caste gap in development outcomes decreases.

Meanwhile, we can ignore interpreting the impact of the power share of the high caste on the overall population in the district, i.e., κ, because our focus is not the impact on the average population, but the inter-caste gap in years of schooling, i.e., τ

3.4. Data Sources & Construction of Caste Variable

3.4.1. Caste Marker

Concerning the caste variable, we use two data sources. Firstly, data on the high caste marker, as well as data on years of schooling, educational attainment, wages, business income, and consumption of Balinese individuals and households living in Bali in 2002 are taken from the 2002 Socioeconomic Survey (SUSENAS) core 2002 for Bali sub files. The 2002 Susenas dataset is one of only two years where ethnicity information is available. The other is the 2004 Susenas dataset. The ethnicity information is crucial because we need to select only the Balinese residing in Bali as our sample. The 2002 and 2004 were meant to be household panel surveys by the Indonesia's Bureau of Statistics. We chose the 2002 dataset rather than 2004 dataset to capture as many older individuals as possible (those who were born before 1965). Secondly, data on the high caste titles of the regents is our compilation from various public archives.

Our crucial information is the caste of the government leaders, i.e., regents, and of the citizens. We create the caste information for each regent and head of household according to whether or not they have an aristocratic title, which is the high caste marker. Those with aristocratic titles are assigned into the high caste and the rest into the peasant caste. We compile these caste markers from several anthropology, history and politics books and travel accounts, among others from Covarrubias (1937), Geertz (1969), Vickers (1994), Robinson (1995), and Dwipayana (2004). The caste markers for the high caste are *Ida Bagus, Ida Ayu, Ida Anak Agung, Ida Dewa, Cokorda, Anak Agung, Gusti, Ngakan, Desak, Dewa, Agung*, and *Sagung*.

For the province of Bali, the 2002 SUSENAS core provides household-level data on names with caste's markers for the high caste individuals, relation to the head of household, sex, age, education, health, employment, housing, wage, and consumption. This core data is the same data used by the Indonesian government to estimate poverty rates for province and district levels. The representativeness of the survey up to district level matches our study purpose on understanding the impact of caste power gaps in the government and its impact on citizens' welfare at the district level. We focus on adults (25+) born after 1950 and living in male-headed households and were not enrolled in any educational degree or diploma at the time of the survey.

The 2002 SUSENAS data we use provides us with the aristocratic titles of household heads but not for household members. We follow two steps in assigning caste to households and household members. First, we use these titles to construct the caste of the households, following precisely the same procedure we used in constructing the caste information for the government leaders. Second, we assign the caste of the household head to all his family members. Our definition for family members is all members with blood or marriage relationships to the household head; so we exclude any domestic workers such as maid or driver from our samples. This second step is similar to the method used in caste studies in India (see Hnastkova, Paul & Lahiri, 2012).

3.4.2. School supply information

We compile our dataset on school supply over time from online public archives of the Ministry of National Education. The data contains information on the year of establishment for each school overseen by the Ministry of National Education. It does not cover years of establishment for Islamic schools overseen by the Ministry of Religious Affairs. However, this is a minor consideration because given that the Balinese are overwhelmingly Hindu, their demand for Islamic schools is rationally negligible.

3.5. Results and Discussion

3.5.1. Descriptive Analysis

We start by briefly reporting trends in the power share of the high caste, the surge in the school construction, and inter-caste trends in years of schooling. After that, we report the average statistics of the high caste versus peasant caste for our development outcomes of interest.

3.5.1.1. Inter-Caste Reversal of Power

The inclusion of Bali into the newly born Republic of Indonesia in 1950 introduced new challenges to the Balinese caste system. The Balinese became aware that on a national level they were now one of the minorities in a vast, predominantly Muslim, Indonesia that might perceive the Balinese caste system as a less critical feature in government affairs. However,

concerning Bali's domestic affairs, the then president of Indonesia, Soekarno, whose mother was a high caste Balinese, granted regent positions only to the high caste. Throughout Soekarno's era, he upheld the Bali caste and occupational permutations by appointing only high caste individuals to the top government positions.

The Soeharto military government during 1965/66 to 1998 delivered a major political shock to the Balinese caste system. To restore peace to the island after the failed communist revolt and subsequent mass killings, Soeharto established a semi-military government in Bali where he appointed new regents with an army colonel background who majority happened to be from the peasant caste. The obvious challenge to the caste system started in Gianyar in 1965 with the replacement of the high caste regent with an officer from the peasant caste. The same method of replacement then occurred in another six regencies: in Badung in 1966, in Jembrana in 1968, in Tabanan in 1975, in Bangli in 1976, and in Buleleng in 1978, thus turning the caste-occupation permutation upside down[10]. However, under a strongly autocratic military government, none of the Balinese high caste families dared to challenge openly the Soeharto's decision[11]. The peasant caste officers ruled throughout his presidency in Tabanan, Karangasem, and Buleleng, although Soeharto subsequently restored high caste regents in four regencies after 5 to 13 years of regents from peasant caste.

The fact that Soeharto distorted the caste norm regarding who lead the local government in Bali paved the way for the peasant caste to accumulate political capital in order to dominate government leadership in Bali. Because political leadership gives the power to distribute resources to a select group of supporting citizens (Mueller, 2003), it is likely that regent from peasant caste background used such opportunity to disproportionately distributes government resources to their caste rather than to their opponent, the high caste. Additionally, the high caste no longer had the power to discriminate against the peasant class in public schools and jobs. Overall, the leadership position can influence the distribution of government resources, limit

[10] Soeharto left only the former royal families of Klungkung remaining in regency positions in Klungkung regency. All other royal houses of Bali emanate from the royal house of Klungkung, formerly the Kingdom of Gelgel. Soeharto probably tried to minimize potential organized rejection of his anti-caste movement by allowing these supreme royal families of Klungkung to maintain power. The royal house of Klungkung eventually lost the regency position to peasant caste during a popular vote in 2005.

[11] The Balinese voted for Soeharto's Golkar party during Soeharto's presidency, but then massively shifted to the opposition party after the fall of Soeharto government (PemiluAsia, 2015; KPU, 2014)

the ability of the high caste to discriminate the low caste in the marketplace, and help the peasant caste raise their human capital and broader development outcomes.

The dynamic of the power share of the high caste in the nine districts in Bali is presented in Figure 3.2. Except for Klungkung and Gianyar, all other districts have experienced a drastic reduction in the power share of the high caste in district leadership. That is, the low or peasant caste has replaced the high caste as regents or mayors. The sharp declines occur initially during the mid-1960s. Sharp declines like the ones in Tabanan, Karangasem, and Buleleng indicate that the peasant caste persistently holds on to the regent or mayor position in the district.

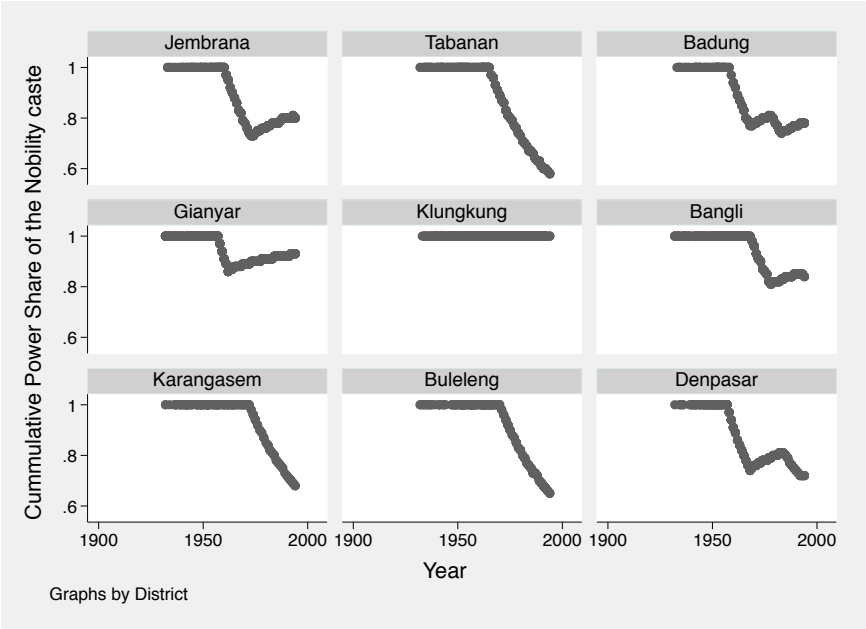

Figure 3.2. Reduction in the power share of the high caste power across Bali
Source: author's analysis

3.5.1.2. Inter-Caste Gaps in Development Outcomes

Theoretically, the power takeover could disproportionally benefit the low caste because the event gives the peasant or low caste member the authority to manage public resources. In the case of India, this benefit can be gauged from the development outcomes that are embedded in individuals or groups, primarily through educational attainment (Hnatkovska, Lahiri, and Paul, 2012; 2013). There is an indication that the reduction in the power share of the high caste correlates with the decreasing caste gap in years of schooling (Figure 3.3).

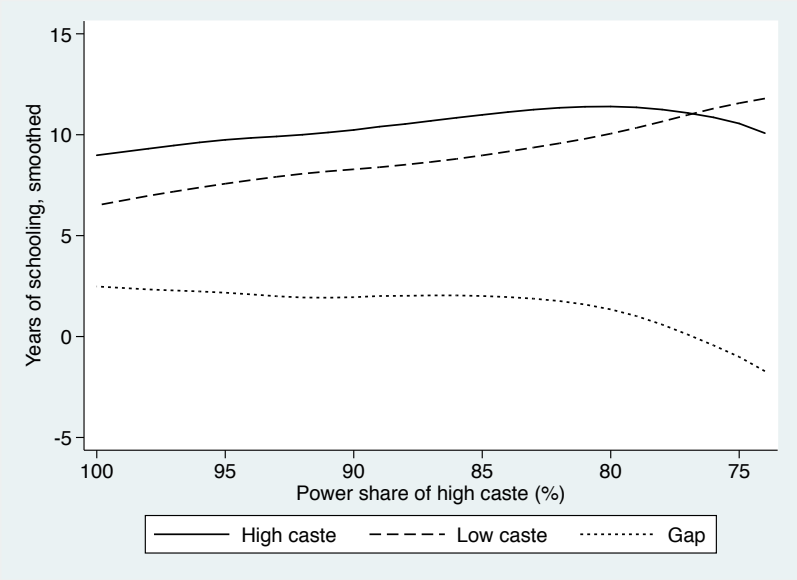

Figure 3.3. Power share of high caste and inter-caste gap in years of schooling
Source: author's analysis

Indeed, when the power share of the high caste drops below 80 percent, there is an indication that the low caste group is not merely catching up to the high caste level of education but is surpassing their achievements.

On the supply side of education, the element that could disproportionately benefit the educational attainment of the peasant caste is the boom in school construction since the 1960s in Bali. Although all the districts experienced a sudden increase in the establishment of new elementary and secondary schools during the late 1960s to early 1970s, the districts of Badung, Buleleng, and Karangasem are the ones with the highest spikes. Tabanan and Buleleng are the top two districts with the highest cumulative number of schools since the late 1960s (see Figure A1 in Appendix).

Our sample includes individuals aged 25 to 52, and those born after the 1950 Republican war. Regarding the inter-caste gap in years of schooling, the data from the 2002 SUSENAS Core shows that there is a clear trend that the gap is decreasing over time (see Figure 3.4). The downward trend in the gap of years of schooling is sharper for those born in 1965 or later.

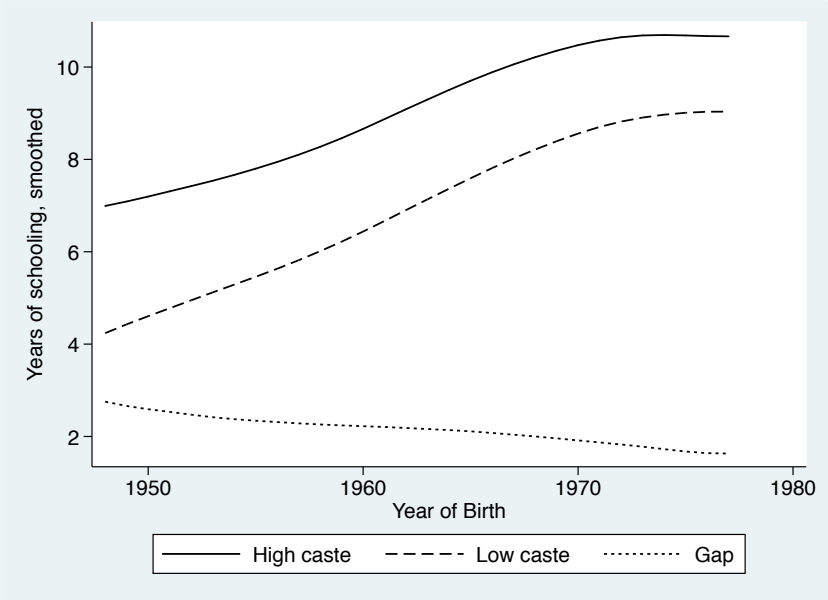

Figure 3.4. Time trend and inter-caste gap in years of schooling
Source: author's analysis

With this clear time trend in school supply and years of schooling, it is necessary to control for both trends in the inter-caste schooling regressions.

We now turn to the descriptive statistics of the development outcome variables. The summary for the outcome variables is presented in Table 3.2; the extended information is presented in Appendix 1. Overall, using a naïve comparison, the high caste has higher development outcomes whether for years of schooling, monthly wage, per capita monthly household business income, or per capita monthly household consumption. In detail, the high caste individuals have on average 9.39 years of schooling. That is 20.9 percent higher than that of the peasant caste.

Regarding wages, high caste individuals earn an IDR 844 thousand monthly wage — almost 15 percent more than that of the peasant caste. At the household level, high caste households have on average an IDR 509 thousand per capita monthly business income and an IDR 465 thousand per capita monthly expenditure. The income and expenditure of high caste households are 28.5 percent and 16.4 percent higher, respectively than that of peasant households. High caste households are also more likely to own goods, shops or restaurants, workshops, and other valuable assets except for farming land.

Table 3.2. Statistical Summary

Variable	Panel A: Observations		Panel B: Mean		
	High caste (1)	Low caste (2)	High caste (3)	Low caste (4)	Gap (5)
A. INDIVIDUAL LEVEL					
Year of schooling, YOS	1085	7304	9.39	7.42	1.97
Log (YOS)	1085	7304	2.20	1.91	0.30
Monthly wage (1000 IDR)	387	2006	844.19	718.43	125.75
Log (Monthly wage)	387	2006	6.52	6.40	0.12
B. HOUSEHOLD LEVEL					
Monthly business income per capita (1000 IDR)	177	1170	508.91	363.80	145.11
Log (Monthly business income per capita)	177	1170	12.95	12.62	0.33
Monthly expenditure per capita (1000 IDR)	552	3780	465.34	389.08	762.55
Log (Monthly expenditure per capita)	552	3780	12.45	12.30	0.15

Source: authors' analysis (Table A1 in the Appendix)

3.5.2. Estimation Results

We now turn to the estimation results. Table 3.3 presents the summary of estimation results for each development outcome using Equation 3.1. Panel A is the results from regressing the respective development outcome on a high caste dummy and a constant. Further, panel B includes district FE, age and other exogenous variables, e.g., being female for schooling and wages regressions, living in a rural area for consumption regression, and a dependency ratio for income regression. Finally, panel C augments Panel B with the highest educational attainment variable to see how much the inclusion of educational attainment affects the estimation results. The regression for the schooling gap is not available for Panel C because the education variable is the independent variable itself. Panel B is the complete version of Equation 1 for the years of schooling regression, while Panel C is the complete version of Equation 1 for the other development outcomes.

Table 3.3. Inter-caste gaps in development outcomes in the year 2002

Main independent variable	*Dependent Variable is:* Log Years of Schooling	Log Monthly Wage (2nd-step)	Log Monthly household consumption per capita	Log Monthly household Income per capita
	(1)	*(2)*	*(3)*	*(4)*
		Panel A: Base Model		
High caste	0.297***	0.083***	0.157***	0.328***
	(0.002)	(0.031)	(0.002)	(0.00351)
District FE	No	No	No	No
Other covariates	None	None	None	None
R^2 adjusted	0.016		0.011	0.036
Wald chi^2		198.04		
	Panel B: District FE with covariates but without education variable			
High caste	0.265***	0.079**	0.112***	0.190***
	(0.002)	(0.040)	(0.002)	(0.003)
District FE	Yes	Yes	Yes	Yes
Other covariates	Age FE, Female	None	None	None
R^2 adjusted	0.282		0.290	0.370
Wald chi^2		146.69		
	Panel C: District FE with covariates and education variable			
High caste	NA	0.004	0.078***	0.154***
		(0.024)	(0.002)	(0.0031)
District FE		Yes	Yes	Yes
Other covariates		Highest educational attainment dummies, Female, Expected years of experience, Expected years of experience square	Share of working adults based on five highest educational attainment level, Rural dummy	Share of working adults based on five highest educational attainment level, Dummies of five types of physical capital
R^2 adjusted	NA		0.314	0.406
Wald chi^2		7.61		
N	8670	4661	4332	1347

Source: Summarized from Table 3.4. (for column 1), Appendix Table A2 (for column 2), Appendix Table A3 (for column 3), and Appendix Table A4 (for column 4) in the Appendix. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01. Note: NA: not available. District fixed effect enters the regression as dummies of eight districts. They are, Badung, Jembrana, Tabanan, Gianyar, Klungkung, Bangli, Karangasem, Buleleng, and Denpasar. Highest educational attainment enters the regression as dummies of five educational level: no degree, completed basic (6 years), completed secondary (9 years), completed senior secondary (12 years), and graduated from college or university (13 years or more). All regressions include constant terms. The five types of physical capital dummies are ownership of farmland, ownership of restaurant, ownership of mechanical workshop, ownership of valuable goods, and ownership of other business.

Panel A in Table 3.3 shows that for the overall population across Bali in 2002, the high caste has 35 percent higher years of schooling than the low caste. Moreover, the high caste has 9 percent higher wages, 39 percent higher business income and 17 percent higher consumption

per capita than the peasant caste. These gaps are equivalent to 2.07 higher years of schooling, an IDR59,630 per capita higher wage, an IDR127,618 per capita higher business income, and IDR50,025 per capita higher consumption. To put it into a Balinese economic perspective, the gaps in wages, income and consumption are equal, respectively, to 42 percent, 90 percent, and 35 percent of Bali's poverty line in 2002. So, the gaps are quite substantial.

Restricting the comparison of inter-caste development outcomes to individuals from the same district, panel B in Table 3.3 shows that the high caste still outperforms the low caste, although to a lesser magnitude in years of schooling and wages, and a much lesser magnitude for business income and consumption. This result implies that concerning the overall population in Bali, a small part of the gaps in schooling and wages, and a large part of the gaps in business income and consumption are due to inter-district variation. However, even after considering this district variation, the high caste still maintains superior outcomes. Panel B in Table 3.3 shows that with further controlling for exogenous covariates and district differences, the high caste still maintains higher development outcomes that the peasant caste. In detail, the high caste has 2.8 higher years of schooling, 8 percent higher wages, a 21 percent higher business income, and a 12 percent higher consumption level than the peasant caste.

Taken together, Panels A and B display the presence of inter-caste gaps in education, wages, business income, and consumption. The gaps are positive and statistically significant, indicating that the high caste outperforms the peasant caste in these four indicators. The statistical significance and the direction of the gaps are stable to different estimation specifications, although household consumption and income are more sensitive to the district fixed effect estimation and the inclusion of additional covariates. The other notable feature in Table 3.3 Panel A and Panel B is that the inter-caste gaps in years of schooling and business income are much higher than the gaps in consumption and wages.

The inclusion of the education variable in Panel C eliminates the remaining gap in monthly wages. As wages rise in proportion to educational attainment, the importance of caste in determining wages diminishes. This situation implies that the 8 percent higher wage of the high caste (in Panel B Table 3.3) is due to their 2.8 years of schooling advantage.

Meanwhile, educational attainment does not fully explain the inter-caste gap in business income and consumption in Panel B in Table 3.3. From Panel C in Table 3.3, controlling for

educational attainment only partially reduce the gaps in business income by 4 percentage points (from 21 percent to 17 percent) and reduce the gap in consumption by 4 percentage points (from 12 percent to 8 percent). The remaining gaps in income and consumption are substantial. They are equivalent to 78 and 20 percent of the 2002 Bali poverty line, respectively.

Does the inter-caste gap in educational attainment affected by the power takeover by the peasant caste? To qualify for the importance of the reversal of power, we turn to estimation results for Equation 2. We could only run the estimation for the education variable because this is the only variable that we can reconstruct in a time series manner using the year of birth of the individuals in the sample.

The estimation results are presented in Table 3.3. The Base model in Table 3.3 is similar to the Base model in Table 3.2 for education regression. Moreover, the Age & District FE model is the detailed estimation for Panel C in Table 3.3. First, we examine if the overall estimation results make sense. The Power model is the one with the power share of the high caste and its interaction with the caste variable. Meanwhile, the School Supply model adds information on the supply of schooling when the individual was seven years old.

The coefficient for the high-caste variable in the Power model is negative and statistically significant. However, the 'Total Effect of high caste' (third row from the bottom) which is the linear combination of the high-caste variable and all its interaction terms shows that the sign is statistically significant, and its magnitude is comparable to the High-caste coefficient in Panels A, B, and C in Table 3.4. That is, the total inter-caste gap in Equations 1 and 2 are of similar magnitude.

Now we proceed to columns (3) and (4) to interpret the coefficients for power variables, i.e. power share of high-caste together with its interactions with the high-caste variable. The signs and statistical significances of the abovementioned variables are robust to the inclusion of school supply information.

Table 3.4. Power share and inter-caste gap in Years of Schooling

Independent variable	The dependent variable is log years of schooling			
	Base Model	**Age & District FE Model**	**Power Model**	**School supply Model**
	coef/se	*coef/se*	*coef/se*	*coef/se*
	(1)	*(2)*	*(3)*	*(4)*
High caste	0.297***	0.265***	-0.783***	-0.782***
	(0.002)	(0.002)	(0.015)	(0.015)
Female		-0.351***	-0.350***	-0.350***
		(0.001)	(0.001)	(0.001)
Power share of high caste in the district since 1950			0.172***	0.169***
			(0.016)	(0.016)
High caste x Power Share of the High caste in the district since 1950			1.139***	1.138***
			(0.017)	(0.017)
Number of schools in the district (00)				0.003
				(0.002)
District FE	No	Yes	Yes	Yes
Age FE	No	Yes	Yes	Yes
Constant	1.919***	2.756***	2.647***	2.643***
	(0.001)	(0.003)	(0.013)	(0.013)
Total effect of high caste	0.297***	0.265***	0.285***	0.285***
	(0.002)	(0.002)	(0.002)	(0.002)
N	8,670	8,670	8,670	8,670
R^2 adjusted	0.016	0.282	0.284	0.284

Source: Author's analysis. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01.
Note: District fixed effect enters the regression as dummies of eight districts. They are, Badung, Jembrana, Tabanan, Gianyar, Klungkung, Bangli, Karangasem, Buleleng, and Denpasar.

The Power model in column (3) shows that, controlling for the power at district level, the coefficient for high caste is negative (i.e. -0.783) but its total effect is positive (i.e. 0.285). There are two possible mechanisms at work. First, the caste identity, i.e. being high versus low caste. The high-caste identity *per se* is a disadvantage. Without accounting for the power share, being a high-caste individual is equivalent to 78.3 percent fewer years of schooling than the low-caste individual. Second, the power share of the caste. The power reversal that started in 1965 reduces the power share of the high caste so that we will interpret the coefficient inversely. Therefore, a 1 percent decrease in the power share of a high-caste individual (or a 1 percent gain in power share of the low-caste individual) reduces the inter-caste gap by 1.14 percent, to the advantage of the low-caste individual. These results are robust to the inclusion

of information on the supply side of education, i.e., elementary school supply when the individual is seven years of age.

3.5.3. Robustness Test: Male sub-sample

Although it is considered deviant from ideal practice, Bali caste norms reluctantly allow for a female of a lower caste to marry up to men of a higher caste (Cahyaningtyas, 2016; Limarandani, Sihabudin, and Ronda, 2019). This inter-caste marriage is more likely happen between *Sudra* female and *Ksatria* male due to, historically, polygamous practice among the *Ksatrias* in which the lower caste females were taken as concubines (Vickers, 2012). In some cases, this type of marriage can be accompanied by granting the new wife a generic *Ksatria* title of *Jero*. We do not know if there are married female or widow of this type in our dataset. To account for possible error in caste identification, we rerun the estimation for years of schooling and wages using only male sub-sample. The results from the estimation have similar signs and comparable magnitudes to the estimation results using a full sample of male and female. Therefore, the estimation results and its interpretations are robust to the inclusion or exclusion of female from the dataset.

3.5.4. Discussion

At the time when the high caste *Triwangsa* monopolized the government leadership positions in Bali, there is a positive inter-caste gap in human capital acquisition to the advantage of this ruling caste. This advantage stems from the ability of the ruling high caste to enforce their identity politics preference in education policy on the island. The educated high caste individuals were given privilege for high paying jobs in the agriculture sector and government sector, the two dominant sectors before the 1970s. The practice of enforcing the preference of the ruling high caste is found in India, especially in states where high caste still holds the majority power (Thorat and Newman, 2010; Pande, 2003). This preference suppressed the demand for high education for the low caste *Jaba* individuals for two possible reasons. First, the average *Jaba* households had low income, so they hardly afforded to send their children to pursue a high degree. Second, because both their potential lifetime earnings and reservation wage were low, much lower than that of the higher caste *Triwangsa*, it was more optimal for the *Jaba* youth to enter the labor market, albeit prematurely and with a low level of education.

However, the exogenous political shock in 1965 triggered a massive shift of government leadership positions from the high caste to the peasant caste. This political shock changed both the dominant preference and the ability of the high caste to discriminate the low caste. Given that the high caste *Triwangsa* has lost power in government leadership, even if they still maintain a perforce discrimination preference toward the low caste *Jaba*, the *Twirangsa* could not enforce their preference effectively. Instead, the competing preference from the low caste *Jaba,* especially from the educated ones, whose preference is for the *Jaba* to gain academic title such as professor, doctor, lawyer, and engineer to compete with the traditional honorific titles of the high caste *Triwangsa,* has become the dominant one (Robinson, 1995). This preference boosts the average *Jaba* efforts to bootstrap the whole caste behavior on pursuing higher education to fill in the demand for skilled labors in Indonesia's controlled Bali. The unified movement of the *Jaba* was active due to their ability to organize themselves politically since the 1920s (Robinson, 1995). The changing of the dominant preference from within the caste system is strengthened by the fact that the strong decentralized and military government of Indonesia during 1965 to 1999 did not have a taste preference for the high caste. It had a preference for military government in which, incidentally, the *Jaba* was overrepresented. Under this context of political contestation, the *Jaba* can effectively enforce their preference of identity politics in human capital acquisition without afraid of retaliation from the former ruling caste.

There is two possible competing explanation for the reduction in inter-caste gap in human capital acquisition in Bali. During 1970 onward, there are two other exogenous shocks in play. The first competing explanation is the economic shock and the second one is the shock in the supply side of education, especially in the supply of primary schools.

On the economic shock, the economy in the island expanded dramatically due to the booming of the tourism industry (Vickers, 2012). On the supply side, investment for tourism services such as hotels come predominantly from outside Bali, from Jakarta, probably the those linked to the military government, and from Europe, the United States and Japan. These investors preferred workers and services that was caste-neutral. On the demand side, the majority of tourist come from outside Bali, initially mostly Europeans and as the national economy grew the domestic tourists joined in, whose taste for services was caste-neutral. The caste neutrality of the preferences of both the supply side and demand side of the booming tourism sectors give equal opportunity to both the high and low caste to compete. This competition boost

acquisition of human capital because the more skilful the individuals, the more likely he or she benefitted economically from the booming economy. This notion of neutrality of preference due to positive economic shocks is in line with the evidence of lack of presence caste discrimination in the booming of the diamond industry and the software industry in India (Banarjee *et al*, 2009; Munski, 2010)

Concerning the shock in the supply of primary schools from 1973 onward, Dulfo (2001) argue that the massive school constructions in Indonesia including Bali boost the overall years of schooling and wages of the impacted cohorts. Because the massive provision of government-run schools means more available and more affordable education for the society, the low caste whose income was low benefitted disproportionally in human capital acquisition due to the shock. This process has helped the low caste to close their lagging performance in human capital acquisition.

In our empirical exercise, we directly included the school supply shock variable and indirectly included the shock in the tourism industry in the regression. In our dataset, the expansion of the tourism industry is strongly correlated with the years of birth; hence its effect is absorbed by the age fixed effect strategy. With the inclusion of information that represents these two shocks in the estimation, we assert that, for the case of Bali, the inter-caste reversal of power reduces the inter-caste gaps in development opportunity and, hence, foster a smaller gap in human capital acquisition.

The remaining advantages of the high caste in years of schooling, business income and consumption are likely due to an accumulation of historical privilege. That is, the high caste has been the first mover in education and business investment long before the political shock took place. The gap in years of schooling will likely continue to decline because among the younger cohort there has already been a strong inter-caste convergence in years of schooling. As of 2016, 8 out of 9 regent positions are held by the low caste *Jaba*. With the low caste continuing to consolidate power in Bali, it is likely that they will close the education gap soon.

However, we could not speculate on the remaining gaps in business income and consumption because these two outcomes are not responding actively to the surge in educational attainment. It is likely that these two indicators need more capital investment from low-caste households.

More research is needed to determine if the remaining gaps can be eliminated and what is the most efficient pathway to achieve that objective.

3.6. Conclusion

This study documents the impact of the exogenous political shock that paved the way for the inter-caste reversal of power in district government leaderships among the caste-based society in Bali, Indonesia. We find that power take over by the peasant caste reduces the gaps in years of schooling reduced substantially. It follows suit that the gap in labor market earning has been eliminated along with equalization of educational attainment. However, the gaps in business income and household consumption remain strong, probably due to carrying over from centuries of historical privilege enjoyed by the high caste. The possible explanation is that the political shock is strong enough to shift dominant preference from the high caste preference for preserving the caste-based production system discrimination to low caste preference for higher educational attainment and its associated outcomes. Simultaneously, the political shock makes it hard for the high caste to enforce their preference, even if they still maintain the same preference before the power take over and hence eliminates potential discrimination in labor market and education market.

Other potential competing explanations that the reduction in inter-caste gaps in years of schooling and wages are to economic shock in the tourism sector and shock in the supply side of primary schools are handled well by our estimation strategy. Therefore, we assert that inter-caste reversal of power is good for equality of development opportunity and, hence, human capital acquisition and labor market earnings.

However, we could not generalize other associated development outcomes such as business income and household consumption. The reduction in education gaps of the head of households only partially explain the inter-caste gap in business income and consumption. More research is needed to understand the investment and consumption behavior of the two caste groups, and on this basis to predict if the remaining gaps can be further reduced.

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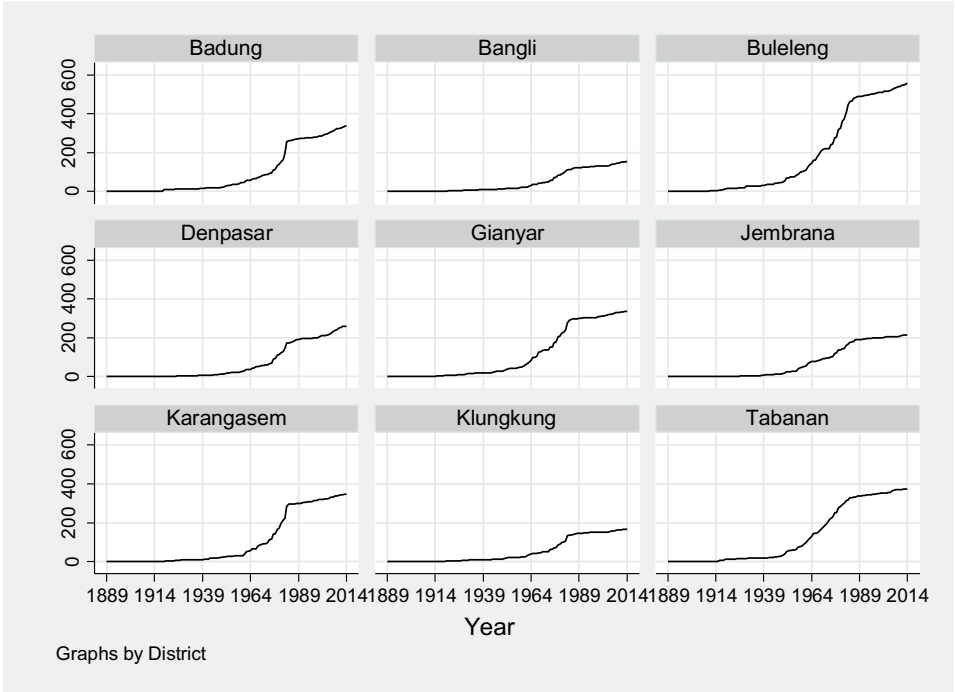
APPENDIX

Figure A1. Cumulative Number of Schools by District



Source: authors' analysis from Ministry of Education (2015)

Table A1. Extended Statistical Summary

Variable	Panel A: Observations		Panel B: Mean		
	High caste	Peasant caste	High caste	Peasant caste	Gap
	(1)	(2)	(3)	(4)	(5)
A. INDIVIDUAL LEVEL					
Year of schooling, YOS	1085	7304	9.39	7.42	1.97
Log (YOS)	1085	7304	2.20	1.91	0.30
Monthly wage (1000 IDR)	387	2006	844.19	718.43	125.75
Log (Monthly wage)	387	2006	6.52	6.40	0.12
Expected experience (year)	684	3977	17.68	18.48	-0.80
Expected experience squared	684	3977	393.90	425.35	-31.45
Female	1085	7304	0.51	0.51	0.01
Log Number of school	1085	7304	4.59	4.65	-0.06
Power share of high caste	1085	7304	0.92	0.94	-0.01
High caste x Power share of high caste	1085	7304	0.92	0.00	0.92
Age (year)	1085	7304	37.44	36.91	0.52
Districts:					
Jembrana	1085	7304	0.12	0.07	0.04
Tabanan	1085	7304	0.15	0.12	0.03
Badung	1085	7304	0.10	0.13	-0.02
Gianyar	1085	7304	0.17	0.13	0.04
Klungkung	1085	7304	0.07	0.12	-0.04
Bangli	1085	7304	0.15	0.11	0.04
Karangasem	1085	7304	0.06	0.12	-0.06
Buleleng	1085	7304	0.07	0.12	-0.05
Denpasar	1085	7304	0.11	0.08	0.03
Weight for individual sample	1085	7304	142.55	140.38	2.17
B. HOUSEHOLD LEVEL					
Monthly business income per household size (1000 IDR)	177	1170	508.91	363.80	145.11
Log (Monthly business income per household size)	177	1170	12.95	12.62	0.33
Monthly expenditure per household size (1000 IDR)	552	3780	465.34	389.08	762.55
Log (Monthly expenditure per household size)	552	3780	12.45	12.30	0.15
Own valuable goods	177	1170	0.93	0.84	0.10
Own Farming Land	177	1170	0.46	0.49	-0.03
Own Shop or Restaurant	177	1170	0.16	0.13	0.03
Own Workshop (*Bengkel*)	177	1170	0.02	0.01	0.01
Own Other Productive assets	177	1170	0.23	0.20	0.03
Rural	177	1170	0.34	0.54	-0.20
Dependency ratio	177	1170	0.29	0.31	-0.02
Share of adults without any degree	177	1170	0.08	0.16	-0.08

Variable	Panel A: Observations		Panel B: Mean		
	High caste	Peasant caste	High caste	Peasant caste	Gap
	(1)	(2)	(3)	(4)	(5)
Share of adults with basic education degree	177	1170	0.21	0.24	-0.03
Share of adults with senior high school degree	177	1170	0.15	0.11	0.03
Share of adults with diploma degree	177	1170	0.04	0.02	0.02
Share of adults with university degree	177	1170	0.06	0.02	0.04
Weight for household sample	177	1170	166.57	163.21	3.36

Source: authors' analysis

Table A2. Inter-caste gap in Monthly Wage, detailed version

	Base		District FE		Extended	
	2nd Step Log monthly wage	1st Step Heckman Selection	2nd Step Log monthly wage	1st Step Heckman Selection	2nd Step Log monthly wage	1st Step Heckman Selection
Individual is High caste	0.087**	-0.051	0.079**	-0.047	-0.004	0.031
	(0.037)	(0.109)	(0.040)	(0.111)	(0.024)	(0.105)
Highest educational attainment (Ref. None)						
Basic		0.273***		0.275***	0.189***	0.203***
		(0.062)		(0.061)	(0.041)	(0.068)
Secondary		1.061***		1.070***	0.520***	0.840***
		(0.108)		(0.108)	(0.065)	(0.139)
Diploma		1.932***		1.943***	0.797***	1.680***
		(0.134)		(0.135)	(0.063)	(0.199)
University		1.806***		1.817***	0.980***	1.328***
		(0.201)		(0.203)	(0.070)	(0.238)
Female		-0.555**		-0.545**	-0.216***	-0.519
		(0.266)		(0.269)	(0.061)	(0.328)
Expected years of experience		0.088***		0.089***	0.041***	0.074***
		(0.006)		(0.006)	(0.005)	(0.008)
Expected years of experience squared		-0.002***		-0.002***	-0.0005***	-0.002***
		(0.000)		(0.000)	(0.0001)	(0.0002)
Relationship to household head (Ref. Self)						
Wife		-0.823***		-0.847***		-1.092***
		(0.287)		(0.288)		(0.369)
Son		-0.537***		-0.545***		-0.707***
		(0.096)		(0.099)		(0.123)
Daughter		-0.333		-0.356		-0.397
		(0.379)		(0.382)		(0.458)
Son-in-law		-0.580***		-0.592***		-0.774***
		(0.186)		(0.185)		(0.268)
Daughter-in-law		-0.735**		-0.764**		-1.013***
		(0.311)		(0.312)		(0.389)
Parent/Parent-in-law		-0.792***		-0.802***		-1.003***
		(0.234)		(0.236)		(0.273)
Other family relation		-0.525**		-0.541**		-0.611**
		(0.230)		(0.231)		(0.285)
Marital status (Ref. Married)						
Single		-0.133		-0.133		-0.135
		(0.108)		(0.108)		(0.114)
Divorced		0.055		0.066		0.114
		(0.253)		(0.252)		(0.274)
Widowed		-0.201		-0.198		-0.224

	Base		District FE		Extended	
	2nd Step	1st Step	2nd Step	1st Step	2nd Step	1st Step
	Log monthly wage	Heckman Selection	Log monthly wage	Heckman Selection	Log monthly wage	Heckman Selection
		(0.249)		(0.251)		(0.295)
Family has in-house maid		1.078***		1.079***		0.641***
		(0.177)		(0.174)		(0.216)
Famuly has under-5 year old child		-0.095		-0.087		-0.096
		(0.150)		(0.149)		(0.153)
District FE	No	No	Yes	Yes	Yes	Yes
Constant	6.713***	-0.497***	6.822***	-0.592***	5.666***	0.079
	(0.031)	(0.169)	(0.015)	(0.170)	(0.096)	(0.208)
/athrho	-1.170***		-1.157***		-0.383***	
	(0.087)		(0.093)		(0.132)	
/lnsigma	-0.355***		-0.365***		-0.605***	
	(0.038)		(0.036)		(0.036)	
Number of observations	5,096		5,096		5,096	

Table A3. Inter-caste gap in Monthly Household Consumption per capita, detailed version

	Dependent variable is Monthly Household Consumption per capita		
	Base	**District FE**	**Extended**
	coef/se	**coef/se**	**coef/se**
High caste	0.157***	0.112***	0.078***
	(0.002)	(0.002)	(0.002)
Human capital (Reference = Share of working adults without any degree):			
Share of working adults with Elementary degree			-0.011***
			(0.002)
Share of working adults with Junior degree			0.024***
			(0.003)
Share of working adults with Senior degree			0.167***
			(0.002)
Share of working adults with Diploma or University degree			0.438***
			(0.005)
Rural			-0.139***
			(0.001)
District FE	No	Yes	Yes
Constant	12.344***	12.927***	12.830***
	(0.001)	(0.002)	(0.002)
Number of observations	4,332	4,332	4,332
R2 adjusted	0.011	0.272	0.314

Source: Author's analysis from 2002 SUSENAS Core. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Table A4. Inter-caste gap in Monthly Household Business Income per capita, detailed version

VARIABLES	Base	District FE	Human Resources	Physical capital	Human & Physical capital
	(1)	(2)	(3)	(4)	(5)
High-caste household	0.328***	0.190***	0.157***	0.168***	0.154***
	(0.0035)	(0.0033)	(0.0031)	(0.0033)	(0.0031)
Share of HH members <15 & >64 years of age			-0.779***	-0.717***	-0.758***
			(0.00485)	(0.00477)	(0.00482)
Human capital (Reference = Share of working adults without any degree):					
Share of working adults with Elementary degree			-0.0563***		-0.0699***
			(0.00337)		(0.00333)
Share of working adults with Junior degree			0.0296***		-0.00657
			(0.00487)		(0.00481)
Share of working adults with Senior degree			0.200***		0.162***
			(0.00385)		(0.00389)
Share of working adults with Diploma or University degree			0.646***		0.639***
			(0.00672)		(0.00682)
Physical capital (not mutually exclusive):					
Own Farming Land				-0.0419***	-0.0298***
				(0.00215)	(0.00210)
Own Shop or Restaurant				0.158***	0.158***
				(0.00308)	(0.00308)
Own Workshop (*Bengkel*)				-0.133***	-0.105***
				(0.00946)	(0.00938)
Own valuable goods				0.139***	0.105***
				(0.00258)	(0.00270)
Own Other Business				0.109***	0.124***
				(0.00274)	(0.00271)
District FE	No	Yes	Yes	Yes	Yes
Constant	12.66***	13.08***	13.19***	13.14***	13.07***
	(0.0013)	(0.0024)	(0.0035)	(0.0035)	(0.0040)
Observations	1347	1347	1347	1347	1347
R^2 adjusted	0.036	0.270	0.386	0.370	0.406

Source: Author's analysis from 2002 SUSENAS Income Module. Robust standard errors are in parentheses; * p<0.10, ** p<0.05, *** p<0.01

Chapter 4. Religious-based Opportunities and Disparities of Human Capital Accumulation in Eastern Indonesia

4.1. Introduction

It has been discussed in recent literature that global efforts to equalize opportunities for human capital development have been threatened by the resurgence of religious-based politics that by default fosters inequality of opportunity based on religious affiliation (Fukuyama, 2018; World Inequality Lab, 2018; PEW Research Center, 2016; 2017; Mohseni and Wilcox, 2016). Religion is one of the oldest institutions that determine rules and norms over which path of development its followers shall pursue (Mueller, 2003). Due to differences in rules and norms across religions, followers of different faiths can have different preferences over human capital accumulation and broader social outcomes, including in educational attainment. Previous cross-country and within-country studies on religion gap in education and social development find Muslims in a disadvantaged position compared to Christians. Regardless of whether they are the majority (Kuran, 2004; Suryadarma, 2010) or the minority (Glewwe and Jacoby, 1994; Booroh and Iyer, 2003; Platas, 2010), Muslims are less formally educated. One of the arguments for this fact is that the strict observance toward conservative Islamic theology leads the Muslims to trade-off modern education against religious education, leading to the Muslim disadvantage phenomenon in modern education.

However, other literature points to an increasing trend in inter-religion competition for political hegemony both from the Muslim and Christian squares around the globe in the past decades (Hungtington, 2004; Ysseldyk, Matheson & Anisman, 2010; Savelkoul et al., 2011, 2012; Norris & Inglehart, 2002). The presence of the competition can change the trajectory of the Muslim-Christian religion gap in education. In this chapter, we aim to fill the literature gap by examining the religion gap in education that is correlated to a regime change form Christians to Muslims in post-independence Indonesia. We assume that both the Muslim and the Christian groups pursue their education beyond their personal hedonic interest i.e., as a group of people,

both groups want to outperform one another in human capital accumulation so that they can maintain superiority in the labor market and political arena.

Since the advent of Islam, there have been cases of regime changes that transfer government power from Christian to Muslim. For example, the Turkish Muslim took over the ruling power from indigenous Christians when the Ottoman Empire annexed most parts of Greek, Spain, Albania, Hungary, and Armenia in the 15th century (Kent, 1996; Erickson, 2001; Erickson, 2013). Also, native Muslim in Indonesia, Malaysia, Brunei, Algeria, Burkina-Faso, Djibouti, Nigeria, Mali, and Sierra Leone seized power from the hand of European Christian after the Second World War (Crowder, 1964; Warren, 1980; Reid, 1993; Herbst, 2000). In the latter cases, if the country is governed by the principle that the religion of the ruler dictates the public affairs, one could hypothesize that during European colonial times the Christian rulers favored development opportunity for Christian masses while simultaneously discriminating against the Muslim masses. Conversely, when country independence transfers the power to the Muslim, the Muslim now has the power to determine the policies for supply and demand for education that, if necessary discriminates and puts the Christian into a disadvantaged position. If this favoritism is parallel to the level of development opportunity, logically there are heterogeneity impacts of country independence on human development outcomes to the advantage of the Muslim.

One approach in this chapter to study the hypotheses mentioned above is to compare across religious group the change in the level of educational attainment before and after a regime change from Christian to Muslim. Of the list of countries in Asia and Africa that experienced the inter-religion transfer of power post the Second World War, Indonesia provides an excellent case for the study. The fitness of Indonesia for the study is due to the availability of population censuses with information on religion and schooling for people who were born before and after the transfer of power. The geographical focus of our study is the eastern part of Indonesia that has been the epicenter of Muslim-Christian contestation and violent conflict since the arrival of the European in the 16th century up to recently (Reid, 1993; Resosudarmo, 2009; Resosudarmo et al., 2009; Arifianto, 2009).

This chapter focuses on Muslim vs. Christian broadly speaking and Muslim vs. Protestant vs. Catholic disparities in Western-style educational attainment for three reasons. Firstly, Muslim and Christian are the two most common religious groups in the multi-religious state setting

globally, and both are the most familiar actors and victims of religious discrimination (Fox and Akbaba, 2015)[12]. Unfortunately, our IPUMS dataset does not facilitate the exploration for all religions. In East Indonesia data, the population of Hindus and Buddhist is less than 2% combined so they are 'invisible' in our sample. Hence, following Suryadarma (2002), I focus on the only two main religions that have considerable sample size in Eastern Indonesia.

Secondly, our datasets enable us to go beyond the current literature by splitting the broader Christian group into Protestant and Catholic branches. We could not split the Muslim groups similarly due to unavailability of sect identification in the dataset. Thirdly, the attainment in Western-style education is the most commonly used measurement for human capital development worldwide (cf. Barro and Lee, 2000). We define western-style education as the school system that teaches reading, writing and arithmetic for scientific education purpose, with or without a religious subject (Penders, 1968). This category is in contrast to the religious school system that solely teaches religious subjects.

The results show that the Muslim gains a higher increase in years-of-schooling (YOS) than Christian, and it is positively correlated to the country's independence. The Muslim's gain is about similar to that of the previously ruling Protestant but higher than the never ruling Catholic. We speculate that this Muslim advantage is strongly correlated to Muslim power holding in the post-colonial era that has aided them with better development opportunity, although their effort does not match that of the Protestant. Our findings are in partial disagreement with the general assertions of Muslim's underperformance in Western-style education attainment (Suryadarma, 2010, Glewwe and Jacoby, 1994; Booroh and Iyer, 2003; Platas, 2016). In our case, Muslim only slightly lags behind Protestant but significantly surpasses average Christian and overall Catholic in the growth of educational attainment.

The rest of the paper is organized as follows. Section 4.2 describes the institutional setting. Section 4.3 introduces the estimation strategy and data sources we use in this study. Section 4.4 shows the results of the main estimation, the channel, and the heterogeneity impact across gender and religious majority-minority status. Section 4.5 presents the conclusion.

[12] Please note that there exist other types of discrimination in post-colonial period. An example commonly mentioned in literature is the on-going affirmative action of Malaysia where government policies are typically favored the Malays and other indigenous groups *(Bhumiputra)* versus outsiders as is written in Malaysian constitution, under article 153. However, this type of discrimination is built initially on racial-based identity politics before it becomes more of a religious-based discrimination (Guan, 2005).

4.2. Literature Review

Religious discrimination is the most common inter-group discrimination around the globe (Fox and Akbaba, 2010). One of the reasons for this phenomenon is because to some of its followers, religious doctrine and values cannot be compromised because they are believed to determine welfare during this lifetime and the afterlife. The group discriminative behavior is stored in the specific worldviews and deeply rooted in the theology subscribed to by its followers. These worldviews and related theologies determine the reasoning and willingness for followers to discriminate and the level of this discrimination.

Historically, the Muslims-Christians willingness to discriminate against each other is inherent and built in to the religious doctrine probably because they were previously developed from the same root and competed in the same region, sometimes through wars (Fox, 2008; Aboona, 2008). Both Islam and Christianity doctrines promote classification of people into the follower (the in-group) versus the non-follower (the out-group) and uses language like "unbelievers" "infidels" or "lost". On the other hand, the ability to discriminate is the condition on the group holding power to set the terms of interaction, law, and policies to restrict follower of the ruled religions from freedom to access services similar to the follower of the ruling religion. However, the act of discrimination, probably triggered by a perception of contestation from historical or recent events and the likelihood of success on such action vary across societies. For instance, states with Muslim rulers such as Senegal and Sierra Leone and states with Christian rulers such as Australia, Peru, and Namibia do not engage in state sanctioned religious discrimination; while other states with Muslim rulers such as Saudi Arabia and Iran do have state sanctioned religious intolerance, and other states with Christian rulers such as Belarus and Bulgaria are highly discriminative toward other religions (Fox, 2008).

Two propositions explain the behavior and development advantage of ruling versus ruled religious group in the inter-group competition setting. These propositions are borrowed from inter-ethnic competition setting. The first proposition is the religion competition thesis in which the advantage in development outcomes belongs to the ruling religious majority group (Scheepers, Gijsberts and Coenders, 2002). This advantage is especially stronger under a popular vote system but not necessarily absent under non-democratic setting (Mueller, 2003).

The religion competition thesis assumes that competition between religions over scarce resources causes a conflict of interest between the competing groups that yield in hostile inter-group attitudes. The dominant group determines the distribution of resources in which they distribute more to the in-group than the out-group, the minority. This type of distribution preference is caused by the fundamental need to perceive in-group as more critical than the out-group. Therefore, the ruling group will gain a higher level of income than the minority (Brown, 1995; Billiet, Esisinga and Scheepers, 1996; Savelkoul et al., 2011). When income massively determines educational attainment, the education level of the ruling group is higher than that of the ruled group. We call this strategy the power advantage.

On the contrary to the religion competition thesis, the Jewish diaspora[13] thesis asserts that to minimize lost due to oppression which can include forceful takeover of the physical assets belonging to the minority, the minority wisely invest more in human capital, which are transferrable across place and time, rather than in physical capital, which are not transferrable. So much so that the human capital investment of the ruled group outnumbers the investment of the ruling group. The result is that the minority power outperforms the majority power in education and related development outcomes (Chiswick, 1983; 1988). We call this the minority wisdom.

Overall, if the effect of the power advantage is stronger than the effect of the minority wisdom, the advantage in education belongs to the ruling group. If the opposite is exact, the advantage belongs to the ruled group. If both effects are equally strong, the education level is indifference to being the religious majority or minority power. Since there is no direct way to infer which effect is stronger, we solve this using empirical exercise.

4.3. Estimation Strategy

Our estimation strategy follows the common test for institutional hypothesis where institutional setting at a certain point of time such as at the time of conception, birth or during childhood determines development outcomes during adulthood lifetime (Currie, 2011). In our estimation,

[13] Jewish diaspora over here is a term for representing a situation where minority group may invest more in their human capital accumulation than their majority counterpart. It does not mean to argue that there will be more Jewish people in Indonesia.

the main institutional variables are the religion of an individual, the country's colonial versus liberty status at the time when the individual was born, and their interaction term. We estimate the liberty dividend in educational attainment for Muslim and Christian using an Ordinary Least Squares (OLS) regression. The main model is as follows:

$$h_{ip} = \alpha + \beta Religion_{ip} + \Omega\, Liberty_i + \tau\, Religion_{ip} x\, Liberty_i + \theta_p + \mu_{ip} \qquad [4\text{-}1]$$

where h_{ip} is the years of schooling of individual *i* who was born in province *p*; $Religion_{ip}$ is the dummy for religion that equals 1 if individual *i* is a Muslim and 0 if Christian; $Liberty_i$ is the regime dummy that equals 1 if individual *i* was born after Indonesia's independence (1946 onward) and 0 if born during colonial period; $Religion_{ip} x\, Liberty_i$ is the interaction term between the religion dummy and the regime dummy; θ_p is the province of birth fixed effect that enters the equation in the form of 12 province dummies; μ_{ip} is the white noise error term; α is the constant term; and β, τ and Ω are OLS estimators. Ω is the liberty dividend for Christian, while $(\Omega + \tau)$ is the liberty dividend for Muslim. Therefore, τ is the gap in liberty dividend between Muslim and Christian. Muslim advantage is represented by $\tau > 0$, while a disadvantage is represented by $\tau < 0$.

We have deliberately chosen the level form and not the log form for the dependent variable for the convenience of interpretation. The results are presented in the Liberty Model in Table 4.3 column (1). The use of log form does not alter the direction and statistical significance of the religious gap in liberty dividend.

Given the understanding from the literature that country independence will bring about more opportunity for education for the masses, the average years of schooling of the population will rise. Therefore, we hypothesize that Ω will be positive. The value of τ depends on which group has more power in the government to influence the supply and demand side of education and puts more effort into educational investment. There are three scenarios. First, because Indonesia's independence was accompanied by a regime change to the hand of Muslim, the post-independence period will advantage the Muslim. Therefore, τ will be positive. Second, during the post-independence period, the Christian put more effort into their educational investment than the Muslim's to the point that it outweighs the force of hostile pro-Muslim regime. In this case, τ will be negative. Third, if the effort of the Christian matched the

combination of power and effort of the Muslim, both groups will be at par, and consequently, τ will be zero.

There are two concerns about the estimation strategy. They are sample selection bias and simultaneity between religion, regime, and educational attainment. On possible sample selection bias, we screen the sample based on province of birth in which an individual has no control of, and not by the province of residence during the censuses in which the individual has some control due to inter-province migration. We include all adult individuals regardless of their province of residences at time of census as long as they were born in the eastern provinces. Therefore, there is no potential bias due to migration from east to west Indonesia or *vice versa*.

On possible simultaneity between liberty and the dependent variable, the event of Indonesia's independence in 1945 is mainly a snowball effect from a series of global shocks. These global shocks are the Nazi occupation of the mother country (The Netherlands), Japan occupation of East and South East Asia, and then Japan surrender to the Allies following their defeat in 1945. These series of shocks are double-edged swords that weaken the Dutch while boosting the momentum for Indonesia's independence. There is no possible feedback from a person's educational attainment during adulthood to the status of country independence at the time of born. Therefore, we consider the independence or liberty event exogenous.

On possible simultaneity between religion and the dependent variable, we follow de la Croix and Delavallade (2018) who, in their study on Southeast Asian adults, assert that since religion is inherited from one's parents; therefore, belonging currently to a given religion is a good proxy for an upbringing in that religion. Theoretically, parents decide the optimal educational investment for their children in whom a religious belief can have an impact on the type, quantity, and quality of education need to be accumulated by the children (Becker, 1976; 1993). Our data indicate that religion at the time of census is a good proxy for religion during childhood, measured by the commonness of parent and child's religions. For the sub-population who cohabitate with mother or father at the time of the census, 95.19% to 99.49% of respondents have same religion with their mothers, and 93.55% to 99.51% of respondents have same religion with their fathers (Table 4.1).

Table 4.1. The similarity of religion between respondent and mother or father

Religion of respondent	% of respondents who has the same religion with:	
	Mother	Father
Muslim	99.49	99.51
Catholic	95.56	95.02
Protestant	95.19	93.55
Other Christian	96.73	96.40
Sample with parent's information (n)	223554	147073
Total sample (N)	1840289	1840289
% subsample (=100*n/N)	12.15	7.99

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018)

There are minor incidents of religious conversion in Indonesia that sometimes come with high cost such as imprisonment in the case of converting away from Islam (Crouch, 2014). These conversions can be considered random as they are not related to the level of secular education of a person but as the religious text puts it: due to divine revelation. Therefore, there is no systematic direction from education to religion.

Assuming there exists a liberty dividend, to test if the ten policy episodes[14] mentioned in section 4.2 channels the dividend, we augment the Equation [4-1] with the policy variable ($Policy_k$) and its interaction with $Religion_{ip}$. The augmented equation is as follows:

$$h_{ip} = \alpha^{\#} + \beta^{\#} Religion_{ip} + \Omega^{\#} Liberty_i + \tau^{\#} Religion_{ip} x\, Liberty_i + \sum_{k=1}^{k=10} \pi_k\, Policy_k + \sum_{k=1}^{k=10} \delta_k\, Religion_{ip} x Policy_k + \theta_p^{\#} + \varepsilon_{ip} \qquad [4\text{-}2]$$

where $Policy_k$ is the policy dummies *for* the ten policy cohorts, and $Religion_{ip} x Policy_k$ is the interaction terms of the sequence of the ten policy cohorts with the Muslim dummy. The estimators of concern are $\tau^{\#}$ and δ_k. The strategy to distinguish between policies cohort and birth cohort effects is borrowed from Duflo (2001)[15].

Suppose the liberty dividend for Muslim in Equation [4-1] is positive ($\Omega + \tau > 0$) and is higher than that of the Christian ($\tau > 0$). There are two possibilities for Equation [4-2]:

- If education policy *k* channels Muslim's liberty dividend, then

$$\delta_k > 0 \text{ and } \tau^{\#} < \tau$$

[14] The 10 policies cohort are meant to analyse the different policy episodes before and after the independence to look of they are substantial in explaining the religious gap in educational attainment.

[15] Although Duflo's (2001) study has a shorter span of time than this chapter

- If education policy *k* does not channel Muslim's liberty dividend at all, then

$$\delta_k \leq 0 \text{ or } \tau^{\#} \geq \tau$$

The estimation results are presented in the Policy Model in Table 4.3 column (2). The robustness tests are done by augmenting Equation [4-2] with the linear, quadratic, and cubic time trends of the year of birth relative to year of independence. The results from the robustness tests are presented in Robust-1 Model to Robust-3 Model in Table 4.3 columns (3) to (5).

To fit the story that Catholic never ruled nationally and was discriminated heavily during Protestant colonial regime, we re-estimate Equations [4-1] and [4-2] using a modified operational definition for the religion variable. In this section of estimation, $Religion_{ip}$ is the dummy for religious identity that equals 0, 1, and 2 for Protestant, Catholic, and Muslim, respectively. Finally, we re-estimate Equations [4-1] and [4-2] using another modified operational definition for the religion variable, $Religion_{ip}$, to cover 12 sub-groups of religious identities[16]. They are Protestant majority male as the reference category, Protestant majority female, Protestant minority male, Protestant minority female, Catholic majority male, Catholic majority female, Catholic minority male, Catholic minority female, Muslim majority male, Muslim majority female, Muslim minority male, and Muslim minority female. We expect that these detailed classifications aid us in identifying which sub-groups enjoy the highest versus the lowest liberty dividends.

4.4. Data and Descriptive Statistics

Our empirical analysis uses the subset of Indonesia's population census data from the Integrated Public Use Micro Series - International (IPUMS-I) at Minnesota Population Center (2018). The IPUMS-I census data are unique in providing harmonized variables between censuses. The data provides detailed information on religion, completed education level, and demographics including the province of birth and parent's information if respondent cohabitates with the biological mother or father. Our sample comprises of Muslim and Christian individuals who were born in the 11 eastern Indonesia provinces between 1906 and

[16] The 12 sub-group is used to check if female and minority status place higher effort than their male and majority counterparts, respectively, as suggested in the education development literature.

1985; they are the adult labor force (25 to 65 years) in the 1971 and 2010 population censuses. These 11 provinces are West Nusa Tenggara, East Nusa Tenggara, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, and Maluku. We exclude Papua because it has a different history; it was not part of Indonesia until 1963. Meanwhile, we deliberately exclude the censuses between 1971 and 2010 to avoid potential double counting of respondents.

Year of schooling (h_{ip}) is measured for each by the years of the completed degree. The census distinguishes six levels of educational attainment: (i) no education; (ii) some primary; (iii) primary completed; (iv) junior secondary completed; (v) senior secondary completed; and (vi) university completed. We assign the value for years of schooling equals 0 years for the first two levels, equals six years for primary completed, equals nine years for junior secondary completed, equals 12 years for senior secondary completed, and equals 16 years for university completed.

During 1971 and 2010 censuses it is compulsory to state the respondent's religious affiliation to Catholic, Protestant Christian, Muslim, Buddhist, Hindu, or folk religions but not atheist because the government of Indonesia does not acknowledge the atheist status. For the focus of our study, that is, the Muslim and Christian categories, the census provides information whether the respondent's religious affiliation is (i) Catholic (Roman or unspecified); (ii) Protestant; (iii) other Christian; or (iv) Muslim. Based on this information on religion we constructed three sets of religious identity dummies using the following procedures.

First, for the simplest religious identity dummies ($Religion_{ip}$), that is, Muslim versus Christian, we group the first three religious' affiliations (Catholic, Protestant, and other Christian) into Christian, while Muslim is grouped separately. This first religious identity dummy equals 1 for Muslim and 0 for Christian. Second, for the expanded religious identity dummies with split Christian branches, we group Protestant and other Christian into the Protestant branch. This separation is so because in Indonesia the term Christian is the synonym for Protestant and is rarely used to identify Catholic. Therefore, the second religious dummies equal 0 for Protestant, 1 for Catholic, and 2 for Muslim. Finally, we construct the religious identity dummies with gender and minority population status. This third religious identity dummies are Protestant majority male as reference category (equals 0), Protestant majority female (equals 1), Protestant minority male (equals 2), Protestant minority female (equals 3), Catholic majority male (equals 4), Catholic majority female (equals 5), Catholic minority male

(equals 6), Catholic minority female (equals 7), Muslim majority male (equals 8), Muslim majority female (equals 9), Muslim minority male (equals 10), and Muslim minority female (equals 11). Information on gender, that is, male and female are provided in the census data.

Meanwhile, information on the majority and minority population status at the time of birth are extracted from 1930, 1971, 1980 and 1990 censuses. The 1930 census is from Batavia's *Department van Economische Zaken* (1930), while the other censuses are from IPMUS-I (2018). Based on this information, we categorize Catholic in East Nusa Tenggara and West Kalimantan, Protestant in Maluku and North Sulawesi, and Muslim in West Nusa Tenggara, the rest of Kalimantan and the rest of Sulawesi as religious majorities.

Moreover, we construct $Liberty_i$ using the event of country independence. We assign value 0 if the individual is born before or on the year of independence (before or in 1945) or 1 if born after the independence (1946 onward). The descriptive statistics by religious group and sample category is presented in Appendix A1. The average years of schooling (YOS) in colonial time and post-independence time derived from bivariate analysis, liberty dividend for Muslim and Christian, and their differences are presented in Table 4-2.

During colonial time under mostly Christian regime, Muslim on average and of all categories had lower YOS than their Christian counterparts. An average Muslim had 1.06 less YOS that an average Christian. However, under the Muslim regime in post-colonial time, Muslim on average and of all categories except Muslim majority experience higher liberty dividend in YOS as indicated by a higher increase in YOS than that of the Christian. As a group, Muslim gains 0.59 higher increases in YOS than that of the Christian. From the descriptive statistics, there is an early indication that in most cases adherents of the ruler's religion gain higher YOS than those of the other religion. That is, Christian performs better during the Dutch Christian regime, while Muslim perform better during Muslim regime.

We further construct the education policy variable, $Policy_k$, to test if this set of policies channels the liberty dividend. We are interested in 10 policy episodes comprises of 5 policies during colonial time and five others during the post-colonial time. These policies are as follows:

- Establishment of self-financed village schools that teach writing, reading, and arithmetic in Malay but without the subject on Christianity to suit the preference of the Muslim masses (1906-1919),
- Colonial government subsidized the village schools (1920-1930),

- Reduction of support for the village school due to economic recession (1931-1936),
- School reconstruction policies (1937-1941),
- The closing of schools during Japan occupation (1942-1945).
- Reopening of schools despite the Republican war (1946-1949),
- Madrassa's grading and exclusive management under the Ministry of Religious Affairs (1950-1966),
- Nationalization of private madrassas (1967-1974),
- Alignment of the curriculum in both the madrassa and public school systems (1967-1974), and
- Partial nationalization of former Dutch Christian mission schools that are run by the Christian ethnic-churches (1979-1985).

Table 4.2: Means of Years of Schooling by Religious Group and Regime

Religious Identity / Born during	*Average Years of Schooling*		*Difference*
	Muslim	*Christian*	
A. Muslim vs. Christian			
Colonial, Christian regime (1906-1945)	1.9410	2.9967	-1.0558***
	(0.0014)	(0.0026)	(0.0030)
Post-independence, Muslim regime (1946-1985)	7.2516	7.7213	-0.4697***
	(0.0012)	(0.0019)	(0.0023)
Liberty Dividend	5.3106	4.7246	0.5860***
	(0.0019)	(0.0032)	(0.0037)
B. Muslim Male vs. Christian Male			
Colonial, Christian regime (1906-1945)	2.7198	3.6075	-0.8876***
	(0.0023)	(0.0387)	(0.0045)
Post-independence, Muslim regime (1946-1985)	7.7293	8.0341	-0.3048***
	(0.0016)	(0.0027)	(0.0032)
Liberty Dividend	5.0095	4.4267	0.5828***
	(0.0028)	(0.0047)	(0.0055)
C. Muslim Female vs. Christian Female			
Colonial, Christian regime (1906-1945)	1.1825	2.3667	-1.1842***
	(0.0016)	(0.0033)	(0.0037)
Post-independence, Muslim regime (1946-1985)	6.7932	7.4027	-0.6095***
	(0.0017)	(0.0028)	(0.0032)
Liberty Dividend	5.6107	5.0361	0.5746***
	(0.0023)	(0.0043)	(0.0049)
D. Muslim Majority vs. Christian Minority			
Colonial, Christian regime (1906-1945)	1.7427	2.3412	-0.5985***
	(0.0015)	(0.0064)	(0.0062)
Post-independence, Muslim regime (1946-1985)	7.1818	8.7715	-1.5896***
	(0.0013)	(0.0043)	(0.0045)
Liberty Dividend	5.4391	6.4303	-0.9912***
	(0.0020)	(0.0074)	(0.0077)
E. Muslim Minority vs. Christian Majority			
Colonial, Christian regime (1906-1945)	3.0293	3.1575	-0.1283***
	(0.0039)	(0.0028)	(0.0048)
Post-independence, Muslim regime (1946-1985)	7.5330	7.4351	0.0978***
	(0.0024)	(0.0022)	(0.0033)
Liberty Dividend	4.5037	4.2776	0.2261***
	(0.0046)	(0.0036)	(0.0058)
F. Muslim vs. Protestants			
Colonial, Christian regime (1906-1945)	1.9410	3.3160	-1.3906***
	(0.0014)	(0.0038)	(0.0040)
Post-independence, Muslim regime (1946-1985)	7.2516	8.3446	-1.0930***
	(0.0012)	(0.0027)	(0.0030)
Liberty Dividend	5.3106	5.0131	0.2975***
	(0.0019)	(0.0046)	(0.0050)
G. Muslim vs. Catholics			
Colonial, Christian regime (1906-1945)	1.9410	2.1366	-0.1956***

Religious Identity / Born during	*Average Years of Schooling*		*Difference*
	Muslim	*Christian*	
	(0.0014)	(0.0037)	(0.0040)
Post-independence, Muslim regime (1946-1985)	7.2516	6.7618	0.4897***
	(0.0012)	(0.0034)	(0.0037)
Liberty Dividend	5.3106	4.6253	0.6853***
	(0.0019)	(0.0051)	(0.0054)

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Note: Estimations are weighted using census weights. Standard errors are in parentheses. For difference: * p<.10, ** p<.05, *** p<.01

We construct a set of 10 policy dummies using the above policies with the first policy episode (establishment of self-financed village schools in 1906-1919) function as the reference category. We map each policy dummy and the individuals using the year of birth, therefore creating ten policy-at-birth cohorts or simply called policy cohorts or birth cohorts. The plots of average years of schooling for the policy episodes by variation of religious identities are presented in Figures 4-1 and 4-2. When comparing performance of Christian vs. Muslim, (Figure 4-1), there is a considerable gap of YOS during 1906-1919 to the advantage of the Christian but that both groups had moved almost at the same rhythm until 1945. During 1946-1974 the Muslim scored a sharper increase in YOS and caused convergence across religion, at least in graphic, for the 1979-1985 cohort. However, a closer look at the Christian branches indicates that the Muslim and Catholic performed almost similar during Protestant regime but the Muslim boost their performance against Catholic during the post-colonial Muslim regime (Figure 4-2).

Meanwhile, the Protestant branch has been on the top since 1906-1919 cohort although the gap between Protestant and Muslim is narrowing during the post-colonial Muslim regime. Further analysis at the plots for religious identity sub-groups reveals contrasting patterns between Protestant and Catholic. For both male and female, Protestant majority consistently maintain the first or second highest attainment, while Protestant minority perform moderately. Meanwhile, the Catholic minority performs about the same level as (for female) or even better (for male) than the Protestant majority, but Catholic majority performs the worst of all the sub-groups. These polar patterns probably linked to differences in missions and strategies played by the Protestant front versus Catholic front when facing the Muslim regime in the post-independence era.

On the other hand, Muslim majority both male and female who had a weak start during colonial

time managed to take over the Catholic majority. The jump in performance puts Muslim majority in the middle of the distribution, about the same level of educational attainment as their Muslim minority counterparts. Therefore, on average, Protestant performs better than Muslim, while Muslim performs better than Catholic.

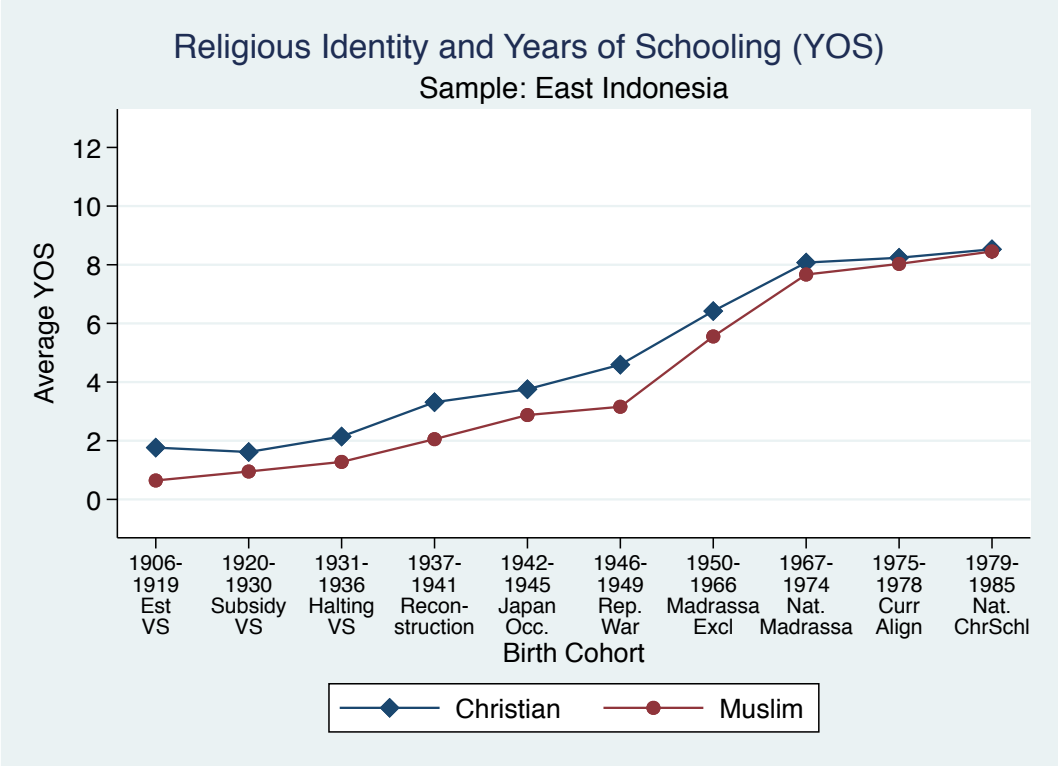


Figure 4.1: Plot of Policy Episodes and Means of Years of Schooling for Christian vs. Muslim
Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018)

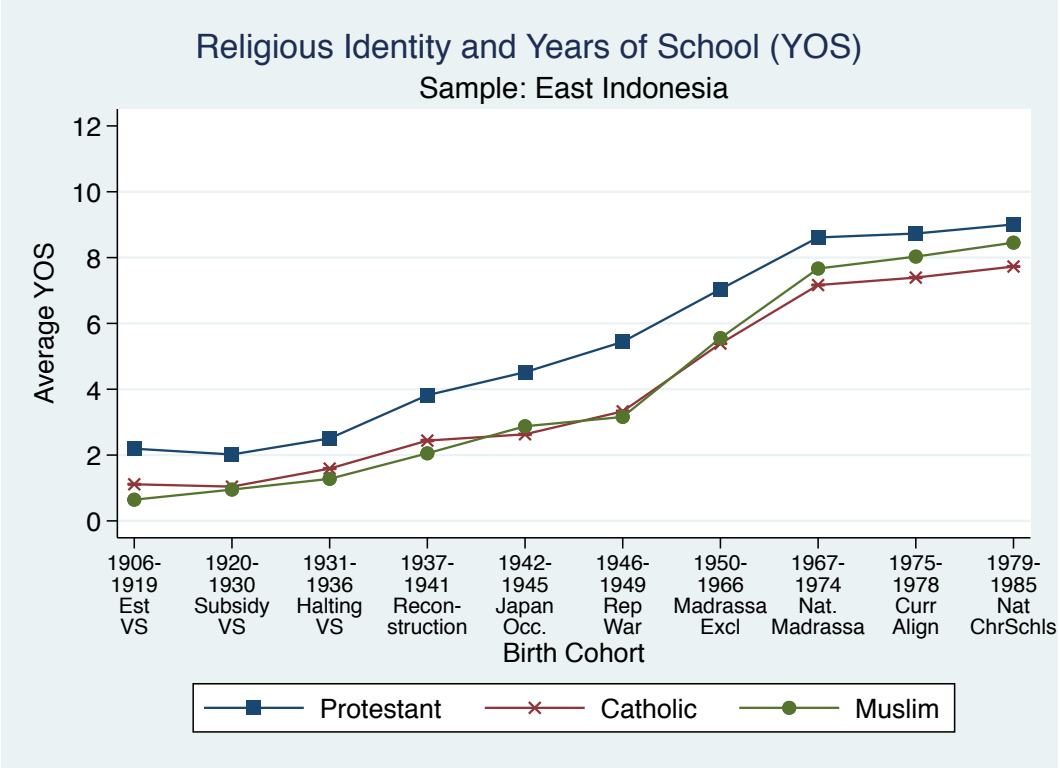


Figure 4.2: Plot of Policy Episodes and Means of Years of Schooling for Protestant vs. Catholic vs. Muslim
Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018)

4.5. Results from the Main Estimates

The main estimation results are presented in Table 4.3 for Christian vs. Muslim and Table 4.4 for Protestant vs. Catholic vs. Muslim. The first column is the base model that we named Liberty Model. The second column is the Policy Model, function as a test for our proposed argument that pro-Muslim education policy foster Muslim advantage. The third to fifth columns are the robustness test for the Policy Model.

Recall that our hypothesis is the adherents of the ruling religion gain higher increase in years of schooling (YOS). The ruling group during the colonial time was the Protestant and during the post-colonial time is the Muslim. Therefore, we expect the Protestant to perform the best during the colonial time while the Muslim perform the best during the post-colonial time. The estimation results partly confirm our hypotheses. As presented in Table 4.3, during colonial time Christian had 0.75 higher years of schooling than Muslim. However, Indonesia's independence turned the tables to the advantage of Muslim who, on average, scores 0.21 higher

liberty dividends in years of schooling. This trading of places on religious group receiving primary benefits pushes for a path for convergence across religion, although equity in schooling attainment has not been fully achieved.

Moreover, we found that not all branches of Christian underperform the Muslim. Analyzing Protestant vs. Catholic vs. Muslim, we find that the Protestant scores the highest liberty dividend in education, followed by Muslim (0.009 lower YOS) and Catholic (0.63 lower YOS) in the second and third place, respectively (Table 4.4). The 0.63 years of education difference between Protestants and Catholics is economically significant. For example, Duflo (2001) found that an increase by 0.12 to 0.19 years of education is substantial enough to boosts labour market wage by 6.8 to 10.10.6 percent in Indonesia.

Table 4.3: Liberty Dividends in Years of Schooling for Christian vs. Muslim

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Religious identity:					
Ref. Christian					
Muslim	-0.747***	-1.011***	-0.972***	-0.991***	-1.011***
	(0.00358)	(0.00657)	(0.00657)	(0.00655)	(0.00657)
Liberty Dividend:					
Liberty	5.189***	0.845***	0.583***	0.615***	0.563***
	(0.00338)	(0.0148)	(0.0148)	(0.0148)	(0.0148)
Liberty x Muslim	0.210***	-0.352***	-0.324***	-0.328***	-0.323***
	(0.00391)	(0.0172)	(0.0172)	(0.0172)	(0.0172)
Policy Cohort	No	Yes	Yes	Yes	Yes
Religious Identity x Policy cohort:					
Muslim x Expansion of subsidized village schools	No	0.391***	0.390***	0.394***	0.411***
		(0.00791)	(0.00792)	(0.00789)	(0.00790)
Muslim x Reduction of support for village schools	No	0.251***	0.176***	0.201***	0.218***
		(0.00855)	(0.00853)	(0.00852)	(0.00852)
Muslim x Repair & reconstruction policy	No	-0.138***	-0.238***	-0.210***	-0.199***
		(0.0100)	(0.0101)	(0.0101)	(0.0101)
Muslim x Japan occupation	No	0.186***	0.114***	0.137***	0.152***
		(0.0119)	(0.0119)	(0.0119)	(0.0119)
Muslim x Republican war	No	-0.0779***	-0.107***	-0.0873***	-0.0628***
		(0.0205)	(0.0205)	(0.0205)	(0.0205)
Muslim x Exclusion of madrasah	No	0.440***	0.357***	0.380***	0.394***
		(0.0188)	(0.0188)	(0.0188)	(0.0188)
Muslim x Nationalisation of private madrasah	No	0.871***	0.797***	0.820***	0.835***
		(0.0189)	(0.0189)	(0.0189)	(0.0189)
Muslim x Curriculum alignment	No	1.053***	0.986***	1.010***	1.024***
		(0.0193)	(0.0193)	(0.0193)	(0.0193)
Muslim x Partial nationalisation of (former) Christian Mission schools	No	1.140***	1.064***	1.086***	1.103***
		(0.0188)	(0.0188)	(0.0188)	(0.0188)
Female	-0.948***	-0.923***	-0.922***	-0.923***	-0.923***
	(0.00176)	(0.00167)	(0.00167)	(0.00167)	(0.00167)
Province of birth FE	Yes	Yes	Yes	Yes	Yes
Year of Liberty	No	No	Yes	Yes	Yes
Year of Liberty square	No	No	No	Yes	Yes
Year of Liberty cubic	No	No	No	No	Yes
Constant	1.568***	1.091***	5.107***	4.009***	3.889***
	(0.00438)	(0.00658)	(0.0115)	(0.0141)	(0.0137)
N	1840289	1840289	1840289	1840289	1840289
Adj. R-square	0.237	0.312	0.317	0.317	0.318

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018). Details are in Appendix A2

Notes: Estimations are weighted using census weights. Robust standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex (female=1), number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Table 4.4: Liberty Dividends in Years of Schooling for Protestant vs. Catholic vs. Muslim

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Religious identity:					
Ref. Protestant					
Catholic	-0.230***	-0.162***	-0.143***	-0.150***	-0.157***
	(0.00554)	(0.0112)	(0.0111)	(0.0111)	(0.0111)
Muslim	-0.777***	-1.025***	-0.978***	-0.999***	-1.022***
	(0.00437)	(0.00860)	(0.00861)	(0.00858)	(0.00860)
Liberty Dividend:					
Liberty	5.409***	1.298***	1.034***	1.066***	1.013***
	(0.00458)	(0.0210)	(0.0211)	(0.0211)	(0.0211)
Liberty x Catholic	-0.625***	-0.862***	-0.856***	-0.856***	-0.855***
	(0.00677)	(0.0287)	(0.0287)	(0.0287)	(0.0287)
Liberty x Muslim	-0.00869*	-0.800***	-0.770***	-0.774***	-0.769***
	(0.00499)	(0.0228)	(0.0228)	(0.0228)	(0.0228)
Policy Cohort:	No	Yes	Yes	Yes	Yes
Religious Identity x Policy cohort:					
Catholic x Expansion of subsidized village schools (1920-1930)	No	0.145***	0.145***	0.147***	0.155***
		(0.0136)	(0.0136)	(0.0136)	(0.0136)
Catholic x Reduction of support for village schools (1931-1936)	No	0.255***	0.217***	0.228***	0.234***
		(0.0150)	(0.0149)	(0.0149)	(0.0149)
Catholic x Repair & reconstruction policy (1937-1941)	No	-0.267***	-0.312***	-0.300***	-0.296***
		(0.0176)	(0.0176)	(0.0176)	(0.0176)
Catholic x Japan occupation (1942-1945)	No	-0.648***	-0.673***	-0.665***	-0.658***
		(0.0199)	(0.0199)	(0.0198)	(0.0199)
Catholic x Republican war (1946-1949)	No	-0.306***	-0.314***	-0.307***	-0.296***
		(0.0348)	(0.0348)	(0.0348)	(0.0348)
Catholic x Exclusion of Madrasah (1950-1966)	No	0.111***	0.0664**	0.0745**	0.0796**
		(0.0317)	(0.0317)	(0.0316)	(0.0317)
Catholic x Nationalisation of private madrasah (1967-1974)	No	0.299***	0.274***	0.283***	0.290***
		(0.0320)	(0.0320)	(0.0319)	(0.0320)
Catholic x Curriculum alignment (1975-1978)	No	0.397***	0.373***	0.382***	0.388***
		(0.0328)	(0.0328)	(0.0327)	(0.0327)
Catholic x Partial nationalisation of (former) Christian Mission schools (1979-1985)	No	0.430***	0.405***	0.413***	0.420***
		(0.0318)	(0.0318)	(0.0318)	(0.0318)

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Muslim x Expansion of subsidized village schools (1920-1930)	No	0.458***	0.457***	0.462***	0.482***
		(0.0106)	(0.0106)	(0.0105)	(0.0106)
Muslim x Reduction of support for village schools (1931-1936)	No	0.358***	0.268***	0.297***	0.316***
		(0.0115)	(0.0114)	(0.0114)	(0.0114)
Muslim x Repair & reconstruction policy (1937-1941)	No	-0.227***	-0.345***	-0.312***	-0.300***
		(0.0130)	(0.0131)	(0.0131)	(0.0131)
Muslim x Japan occupation (1942-1945)	No	-0.0503***	-0.132***	-0.106***	-0.0884***
		(0.0152)	(0.0152)	(0.0152)	(0.0152)
Muslim x Republican war (1946-1949)	No	-0.0804***	-0.112***	-0.0904***	-0.0616**
		(0.0271)	(0.0271)	(0.0270)	(0.0270)
Muslim x Exclusion of Madrasah (1950-1966)	No	0.626***	0.526***	0.551***	0.567***
		(0.0248)	(0.0248)	(0.0248)	(0.0248)
Muslim x Nationalisation of private madrasah (1967-1974)	No	1.129***	1.045***	1.071***	1.089***
		(0.0250)	(0.0250)	(0.0250)	(0.0250)
Muslim x Curriculum alignment (1975-1978)	No	1.350***	1.274***	1.301***	1.317***
		(0.0254)	(0.0254)	(0.0254)	(0.0254)
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)	No	1.451***	1.365***	1.390***	1.410***
		(0.0249)	(0.0249)	(0.0249)	(0.0249)
Female	-0.947***	-0.922***	-0.921***	-0.922***	-0.922***
	(0.00176)	(0.00167)	(0.00167)	(0.00167)	(0.00167)
Province of birth FE	Yes	Yes	Yes	Yes	Yes
Year of Liberty	No	No	Yes	Yes	Yes
Year of Liberty square	No	No	No	Yes	Yes
Year of Liberty cubic	No	No	No	No	Yes
Constant	1.596***	1.101***	5.117***	4.037***	3.920***
	(0.00506)	(0.00863)	(0.0128)	(0.0151)	(0.0148)
N	1840289	1840289	1840289	1840289	1840289
adj. R-square	0.238	0.313	0.318	0.319	0.319

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Estimations are weighted using census weights. Robust standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex (female=1), number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Suppose the gain in educational attainment represents equality versus inequality of schooling opportunity, a graphical presentation on religious identity and liberty dividend suggests that Catholic group is lagging behind Protestant (during the colonial era) and Muslim (during the post-colonial era). This situation probably indicates the continuous presence of discrimination that the Catholic group receive from both the Protestant and Muslim regimes. This discrimination seems too strong, to the point that it limits the ability of the Catholic households to invest in their children's education.

However, a closer look across minority status and gender only find partial support for the above assertion. Disaggregating the liberty dividend for all religion subgroups unmasks the differences across religion and between sub-groups within a religion. For example, although on average the Catholic group lags behind the Muslim group, Catholic female in the majority and minority regions outperform their Muslim equivalents. Meanwhile, Catholic majority male outperforms Protestant majority male even though an average Protestant outperforms an average Catholic. Similarly, between Muslim and Protestant, we find that although an average Muslim underperform an average Protestant, Muslim majority male outperforms its Protestant equivalent.

For comparison within religions, minority group performs better than their majority counterpart. Meanwhile, Catholic and Protestant females outperform their male counterparts, while the opposite is true for Muslim, males outperform their female counterparts.

These above results indicate that the previous affiliation with the Dutch colonial power capitalizes the native Protestant with significant human capital stock and decentralized strategy that boost their educational investment in post-colonial time in East Indonesia. Meanwhile in the case of the Muslim, despite being the national ruler in post-colonial time, Muslim in East Indonesia gains slightly lower growth in educational achievement than that of the Protestant. This situation indicates a relative lack of effort from the Muslim group compared to that of the Protestant group in making use of the more pro-Muslim education environment that their leaders implemented. Indeed, compositely the ethnic-based Protestant churches, which have taken over the former Dutch Protestant Mission schools, is the second biggest providers of schools; only second to the Indonesian state. The Catholic mission and Muslim organization (such as Muhammadiyah) are in the third and fourth places, respectively.

As expected, the Catholic group who never rule nationally trails Muslim and Protestant in liberty dividend. Although the centralized Catholic Church has been dubbed as Indonesia's self-confident minority due to the rapid expansion of its social services among the national elite across the archipelago (Steenbrink, 2007), this strategy left behind the Catholic masses in the Catholic-majority regions. This phenomenon is partly due to costly investment in Catholic schools in Catholic-minority regions to boost their reach and influence among the Catholic and Muslim elite alike, but due to budget constraints, exhausts the school investment in places where they are the majority population.

4.7. Testing for Channel

We further test for our proposed channel of the Muslim's liberty dividend by augmenting the main estimation with ten education policy episodes from 1906 to 1985 and its interaction terms with the religion dummy. These policies are colonial government policies aimed at providing education for the masses as part of the Ethic Colonial Policy (*Ethische Politiek*) and post-colonial government policies aimed at controlling the content of curriculum and funding for both Islamic schools (*madrassah*) and former Dutch Christian mission schools (Permani, 2009; Decree of Minister of Religious Affairs & Minister of Internal Affairs No. 1/1979; Penders, 1968; Brugmans, 1938).

Our estimation results confirm that, aggregately, without these set of post-colonial policies the Muslim's liberty dividend in educational attainment would have been 0.35 years lower than that of the Christian. The results are robust to the inclusion of linear, quadratic and cubic time trends. Interestingly, Muslim was not only gaining through four policy episodes in the post-colonial era when they rule nationally; they also gained through three policy episodes during the colonial era.

The possible explanation is as follows. Before those policy episodes, the education system favoured the Christian masses and the Muslim elites only. In 1536, Christian missionaries from Europe began to establish Christian schools in the kingdom of Ternate (now part of North Maluku province in eastern Indonesia). The main aim of the Christian schools was to train youth to read and comprehend the Bible and Christian doctrine so that they can become qualified preachers and teachers who perform the Great Commission on spreading the Gospel throughout the archipelago. Besides the teaching of Christian doctrine, the schools taught

intellectual skills such as reading and writing in Dutch and Malay, and arithmetic but did not teach productive skills that were commonly needed by the indigenous at that time such as farming, weaving, arts, carpentry, and court laws. During the Dutch administration, the colonial government subsidized the operational cost of the Christian schools so long as they did not operate in the Muslim majority districts, so as not to cause conflict with the Muslim rulers.

The high labor market return for preacher and teacher creates high demand for education from Christian households for their children to attend the Christian schools. On the opposite end, this Christianity feature of the schools is the dead end for the orthodox Muslim parents because fearing their children converting to Christianity and by doing so committed the unforgivable sin *(shirk)*. Moreover, the set of skills taught at the Christian schools were not perceived relevant or containing premium labor market return by certain groups of Muslims who for centuries had been benefitting from their occupation as traders and sailors without the reading, writing and arithmetic skills. Not surprisingly, Muslims were under-represented in this type of school. As of 1799, of the 6680 indigenous students, only 25% were Muslims (Brugmans, 1938; Penders, 1968).

Up until 1906, the Protestant mission schools closely monopolized the supply of western-style education in the archipelago. The minor supplier was the government-run Dutch schools. These Dutch schools were aimed to train Dutch children and some Indonesian nobility to become government clerks. However, there was an understanding that the colonial government was not to provide mass education for the indigenous, especially to Muslim masses and Chinese, lest they comprehend knowledge that set them to fight from freedom from the colonial power. The school fee in Dutch schools was about one-year farmer's wages. Because of the high cost, the supply sides of these schools favored the few rich, mostly the Muslim and non-Muslim nobility, but not the masses, exactly what the colonial government intended.

The Dutch allowed children from the nobility class to be trained in Dutch schools so that they can perform their tasks effectively as the subordinate of the colonial government for the profitability of the mother country. The need for clerks from native nobility was since recruiting human resources from The Netherlands was expensive, so the colonial government cost reduction strategy was to rule indirectly in places where the cost of the direct ruling was perceived higher than the expected benefit from agriculture and mining production and taxes. There was strong demand from the local nobility for their children to attend the Dutch schools

in order for the children to be qualified to inherit their parents ruling positions. In some occasions, the local nobility even pays for private tutors for their children (Penders, 1968; Gouda, 1995) because Muslims headed most of the kingdoms at that time, the elite Muslim benefit from the Dutch schools' establishment.

When the Enlightenment movement gained momentum among he Dutch, under the command of, surprisingly, the Protestant-dominated Dutch Parliament in The Hague, in 1906 the colonial government introduced Ethical Colonial Policy. The mandate of the policy is among others to educate the Muslim masses and not only the nobility and without favoring the Christian. The colonial government then established the village schools *(Sekolah Desa)* that are free from the teaching of Christianity doctrine, but unlike the Christian schools, not subsidized by the government. This policy suited the conservative Muslim who wanted their children to become government clerks but was previously inhibited by the Islamic doctrine of *shirk* that was in Christian schools. With more push from the mother country, the colonial government subsidized the village schools from 1920-1930. The availability of *shirk*-free schools with lower fees boosted the demand for western education from the Muslim masses. These two features of the village schools were probably created demand for schools from Muslim masses and therefore increased higher Muslim enrolment than that of the Christian.

Fast forward, during the post-colonial era, there have been several attempts to preserve and promote Islamic identity in the national education system. The first attempt is to maintain the exclusion of the Islamic religious schools or madrassa outside the secular, national, education system, but with proper grading following the Egypt system of Islamic schools. This attempt was introduced by the Islamic front in the government and was implemented during 1950-1966. After the military coup of the presidency in 1965-1966, the national government introduced the policy to uproot potential anti-secular government doctrine from Islamic schools while at the same time winning the votes of the Muslim leaders. The government nationalize most of the privately run Islamic schools (1967-1974) and align the curriculum of Islamic schools and secular schools (1975-1978). The Islamic front in the Ministry of Religious Affairs and Islamic party in the parliament locked-in these policies by demanding that in turn, the regular schools should provide sufficient religious subject, meaning the Islamic religious subject, with the Ministry monopolizes the supply of religious teachers for both secular and Islamic schools. These two policies help boost the availability of standardized Islamic schools with low or no school fee at all, thanks to government funding. These features fit the demand of low-income orthodox Muslim masses hence a more significant boost to the demand of the

Muslim masses.

Moreover, the Islamic front push for the government to halt the propagation of Christianity, and also control the movement of the Christian schools whose core mission is to spread Christianity. The government then prohibited Christian organization that mostly run schools left by the Dutch Protestant Mission to receive foreign funding and teachers (started in 1979). This policy could be a blessing in disguise for the Protestant schools that at the same time had been denied funding by their affiliated church in the Netherlands who wanted the Indonesian mission to work independently. The Indonesian government partially nationalize these schools in all aspects either human resources, salary, and welfare package except that the schools can maintain their Christian names. Our estimation results show that the policies to control both the Islamic and Christian schools resulted in an advantage for the Muslim.

A detailed estimation covering all the sub-groups within Muslim and Christian categories (Figure 4.3) indicates that the Catholic group in general and Catholic female, in particular, are the co-beneficiaries of these pro-Muslim educational policy regimes. It is likely that this situation is due to Catholic schools' softer approach toward the Muslim where a more inclusive religious subject, compared to Protestant, is provided in Catholic schools in Muslim majority regions. In other words, because Catholic schools are more likely than Protestant schools to get Muslim students from elite households, Catholic schools are less likely to be discriminated by the Muslim majority government.

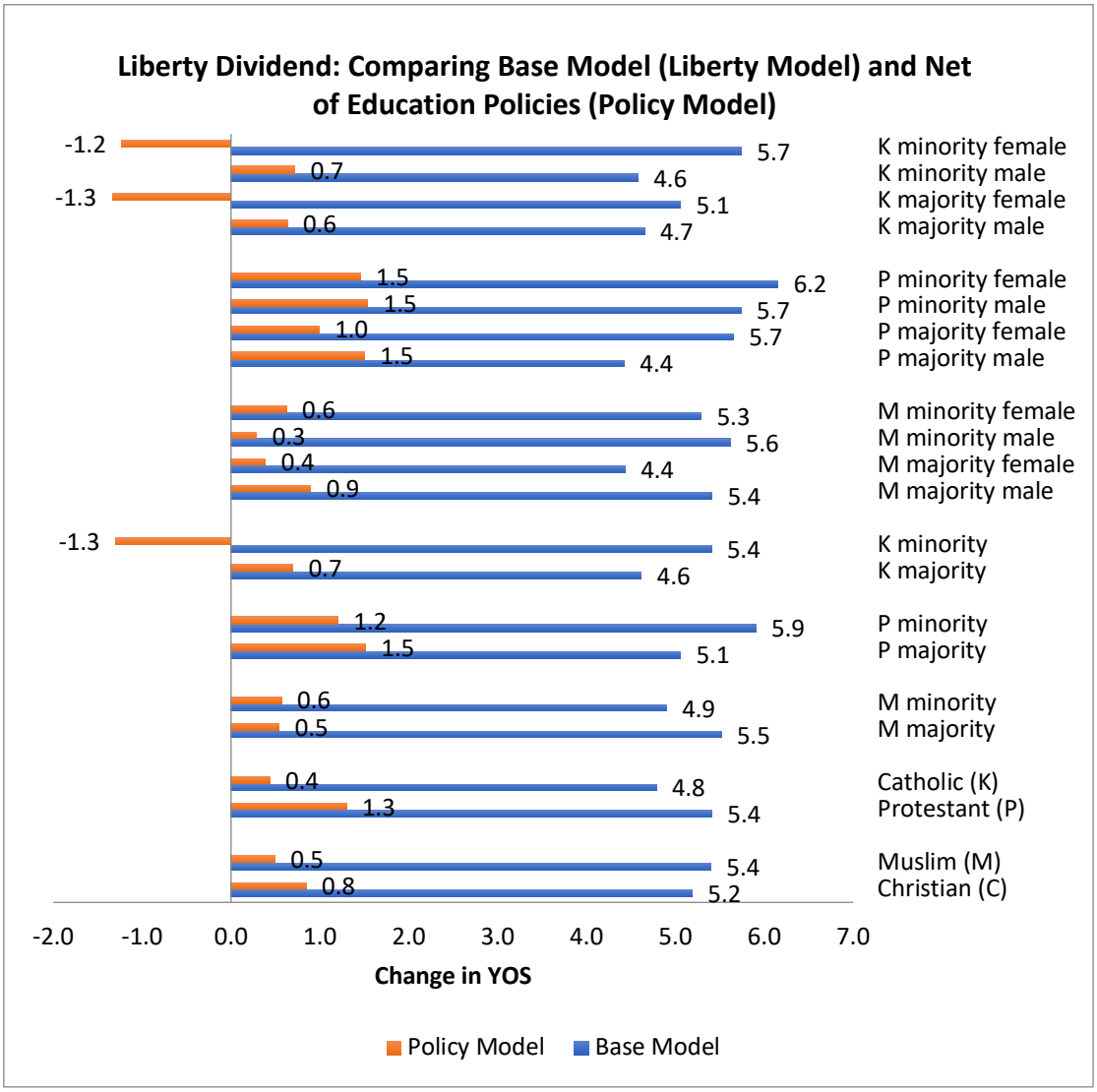


Figure 4.3: Heterogeneous Impacts: Liberty Dividends for All Sub-Groups
Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018). Details in Policy Model in Appendix A2, A3, A4, and A5

4.8. Conclusion

This study aims at testing the hypothesis that, in a multi-religious setting, adherents of the religion of the ruler gain higher level of growth of human capital than those of other religions due to inequality of opportunity. We examine the hypothesis using the case of Indonesia's independence in 1945 that was accompanied by the transfer of national power from predominantly Dutch Protestant to native Muslim, and test these assertions using Ordinary Least Square (OLS) estimation method if the colonial and post-colonial religious affiliations advantage native Protestant and Muslim in their educational achievement, respectively.

In line with that hypotheses, the estimation results show that the Protestant gains higher YOS during Dutch administration while the Muslim gains a higher increase in YOS than the Christian group in post-colonial era. The Muslim's gain is about similar to that of the previously ruling Protestant but higher than the never ruling Catholic. However, as our estimation strategy does not fully tackle the problem of missing variable bias, we. interpret our estimation results as more of correlation rather than causation. Based on the estimation results, we speculate that this Muslim advantage is positively correlated to Muslim power holding that enable them to create a more pro-Muslim education policies, therefore there is a better schooling environment for the Muslim population compared to their Christian counterparts.

Therefore, for East Indonesia case, the story of advancement of educational attainment is a story of two sides of a coin: power holding to influence education policies and effort in educational investment (cf. Roemer, 1998). That is, on one side, in the case of Muslim outperforms average Christian and overall Catholic, the adherents of the ruling religion indeed gain higher liberty dividend. However, on the other side, efforts can matter more than power as indicated in the case that the Protestant slightly surpasses the liberty dividend of the nationally ruling Muslim group, as well as in the case that local Christian minority outperform their Muslim local majority counterpart.

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Appendix

Appendix A1. Descriptive Statistics

No	Sample category / Variable	Religious group				
		Muslim	Christian	Protestant	Catholic	All
A	***Full sample***					
1	Number of observation	1350371	489918	307301	182617	1840289
2	YOS, overall	5.70	6.11	6.69	5.15	5.81
3	Female (%)	50.59	49.46	48.97	50.27	50.55
4	Born during post-colonial (%)	77.87	74.34	74.80	73.59	76.91
5	Minority status (%)	18.88	40.95	57.55	13.9	24.88
6	Sample weight	120.01	222.05	246.70	181.88	147.76
B	***Sample with mother's information***					
1	Number of observation	164139	59415	36729	22686	223554
2	YOS, overall	7.44	7.67	8.34	6.64	7.51
2	Female (%)	40.89	32.52	33.43	31.11	38.65
3	Born during post-colonial (%)	87.58	84.77	85.65	83.40	86.83
4	Minority status (%)	18.80	39.63	55.60	14.86	24.37
5	Mother's YOS	3.25	3.93	4.13	2.83	3.43
6	Sample weight	82.80	90.69	74.15	116.33	84.91
C	***Sample with father's information***					
1	Number of observation	104952	42121	26265	15856	147073
2	YOS, overall	8.00	8.07	8.74	7.04	8.02
3	Female (%)	44.36	35.31	36.71	33.16	41.75
4	Born during post-colonial (%)	91.90	88.91	90.6	86.32	91.04
5	Minority status (%)	20.66	39.79	56.16	14.63	26.16
6	Father's YOS	4.77	5.09	5.92	3.82	4.86
7	Sample weight	64.90	68.28	50.1	90.08	65.87

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Note: Protestant and Catholic are subsets of Christian

Appendix A2. Liberty Dividend in Years of Schooling for Christian vs. Muslim

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Religious identity: Ref. Christian					
Muslim	-0.747***	-1.011***	-0.972***	-0.991***	-1.011***
	(0.00358)	(0.00657)	(0.00657)	(0.00655)	(0.00657)
Liberty	5.189***	0.845***	0.583***	0.615***	0.563***
	(0.00338)	(0.0148)	(0.0148)	(0.0148)	(0.0148)
Liberty x Religious identity:					
Liberty x Muslim	0.210***	-0.352***	-0.324***	-0.328***	-0.323***
	(0.00391)	(0.0172)	(0.0172)	(0.0172)	(0.0172)
Policy Cohort: Ref. Establishment of self financed village schools (1906-1919)					
Expansion of subsidized village schools (1920-1930)		-0.0964***	-1.617***	-1.049***	-0.670***
		(0.00703)	(0.00789)	(0.00919)	(0.00901)
Reduction of support for village schools (1931-1936)		0.381***	-2.182***	-1.330***	-0.971***
		(0.00773)	(0.00975)	(0.0119)	(0.0113)
Repair & reconstruction policy (1937-1941)		1.561***	-1.754***	-0.754***	-0.501***
		(0.00897)	(0.0119)	(0.0142)	(0.0137)
Japan occupation (1942-1945)		1.814***	-1.928***	-0.863***	-0.691***
		(0.0102)	(0.0135)	(0.0157)	(0.0153)
Republican war (1946-1949)		2.129***	-1.875***	-0.785***	-0.667***
		(0.0178)	(0.0201)	(0.0217)	(0.0214)
Exclusion of Madrasahs (1950-1966)		3.929***	-1.567***	-0.447***	-0.583***
		(0.0162)	(0.0207)	(0.0217)	(0.0221)
Nationalisation of private madrasahs (1967-1974)		5.590***	-1.357***	-0.356***	-0.543***
		(0.0163)	(0.0231)	(0.0232)	(0.0237)
Curriculum alignment (1975-1978)		5.759***	-1.912***	-1.036***	-1.097***
		(0.0167)	(0.0246)	(0.0242)	(0.0243)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		6.092***	-2.271***	-1.557***	-1.358***
		(0.0163)	(0.0255)	(0.0248)	(0.0245)
Religious Identity x Policy cohort:					
Muslim x Expansion of subsidized village schools (1920-1930)		0.391***	0.390***	0.394***	0.411***
		(0.00791)	(0.00792)	(0.00789)	(0.00790)
Muslim x Reduction of support for village schools (1931-1936)		0.251***	0.176***	0.201***	0.218***
		(0.00855)	(0.00853)	(0.00852)	(0.00852)

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Muslim x Repair & reconstruction policy (1937-1941)		-0.138***	-0.238***	-0.210***	-0.199***
		(0.0100)	(0.0101)	(0.0101)	(0.0101)
Muslim x Japan occupation (1942-1945)		0.186***	0.114***	0.137***	0.152***
		(0.0119)	(0.0119)	(0.0119)	(0.0119)
Muslim x Republican war (1946-1949)		-0.0779***	-0.107***	-0.0873***	-0.0628***
		(0.0205)	(0.0205)	(0.0205)	(0.0205)
Muslim x Exclusion of Madrasah (1950-1966)		0.440***	0.357***	0.380***	0.394***
		(0.0188)	(0.0188)	(0.0188)	(0.0188)
Muslim x Nationalisation of private madrasah (1967-1974)		0.871***	0.797***	0.820***	0.835***
		(0.0189)	(0.0189)	(0.0189)	(0.0189)
Muslim x Curriculum alignment (1975-1978)		1.053***	0.986***	1.010***	1.024***
		(0.0193)	(0.0193)	(0.0193)	(0.0193)
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.140***	1.064***	1.086***	1.103***
		(0.0188)	(0.0188)	(0.0188)	(0.0188)
Female	-0.948***	-0.923***	-0.922***	-0.923***	-0.923***
	(0.00176)	(0.00167)	(0.00167)	(0.00167)	(0.00167)
Province of birth FE: Ref. West Nusa Tenggara					
East Nusa Tenggara	0.409***	0.327***	0.316***	0.316***	0.315***
	(0.00437)	(0.00415)	(0.00413)	(0.00413)	(0.00413)
West Kalimantan	0.339***	0.160***	0.140***	0.143***	0.143***
	(0.00416)	(0.00392)	(0.00389)	(0.00389)	(0.00389)
Central Kalimantan	1.867***	1.563***	1.535***	1.536***	1.537***
	(0.00539)	(0.00513)	(0.00511)	(0.00511)	(0.00510)
South Kalimantan	1.260***	1.243***	1.231***	1.231***	1.230***
	(0.00379)	(0.00352)	(0.00350)	(0.00350)	(0.00350)
East Kalimantan	2.331***	1.955***	1.929***	1.929***	1.930***
	(0.00500)	(0.00472)	(0.00470)	(0.00470)	(0.00470)
North Sulawesi	2.020***	1.942***	1.926***	1.931***	1.934***
	(0.00422)	(0.00404)	(0.00403)	(0.00403)	(0.00403)
Central Sulawesi	1.765***	1.570***	1.548***	1.551***	1.552***
	(0.00462)	(0.00443)	(0.00441)	(0.00441)	(0.00441)
South Sulawesi	1.200***	1.199***	1.194***	1.196***	1.197***
	(0.00315)	(0.00292)	(0.00290)	(0.00290)	(0.00290)
Southeast Sulawesi	1.518***	1.344***	1.329***	1.330***	1.332***
	(0.00531)	(0.00493)	(0.00491)	(0.00491)	(0.00491)
Maluku	2.381***	2.216***	2.201***	2.203***	2.204***
	(0.00456)	(0.00433)	(0.00431)	(0.00431)	(0.00431)

Independent variable:	*(1) Liberty Model*	*(2) Policy Model*	*(3) Robust 1 Model*	*(4) Robust 2 Model*	*(5) Robust 3 Model*
Year of Liberty			0.125***	0.111***	0.137***
			(0.000293)	(0.000282)	(0.000434)
Year of Liberty square				0.000628***	0.000773***
				(0.00000649)	(0.00000617)
Year of Liberty cubic					-0.0000231***
					(0.000000226)
Constant	1.568***	1.091***	5.107***	4.009***	3.889***
	(0.00438)	(0.00658)	(0.0115)	(0.0141)	(0.0137)
N	1840289	1840289	1840289	1840289	1840289
adj. R-square	0.237	0.312	0.317	0.317	0.318

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01

Appendix A3. Liberty Dividend in Years of Schooling for Protestant vs. Catholic vs. Muslim

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity: Ref. Protestant					
Catholic	-0.230***	-0.162***	-0.143***	-0.150***	-0.157***
	(0.00554)	(0.0112)	(0.0111)	(0.0111)	(0.0111)
Muslim	-0.777***	-1.025***	-0.978***	-0.999***	-1.022***
	(0.00437)	(0.00860)	(0.00861)	(0.00858)	(0.00860)
Liberty	5.409***	1.298***	1.034***	1.066***	1.013***
	(0.00458)	(0.0210)	(0.0211)	(0.0211)	(0.0211)
Liberty x Religious identity:					
Liberty x Catholic	-0.625***	-0.862***	-0.856***	-0.856***	-0.855***
	(0.00677)	(0.0287)	(0.0287)	(0.0287)	(0.0287)
Liberty x Muslim	-0.00869*	-0.800***	-0.770***	-0.774***	-0.769***
	(0.00499)	(0.0228)	(0.0228)	(0.0228)	(0.0228)
Policy Cohort: Ref. Establishment of self financed village schools (1906-1919)					
Expansion of subsidized village schools (1920-1930)		-0.162***	-1.686***	-1.126***	-0.751***
		(0.00994)	(0.0106)	(0.0116)	(0.0114)
Reduction of support for village schools (1931-1936)		0.279***	-2.273***	-1.437***	-1.081***
		(0.0109)	(0.0124)	(0.0140)	(0.0136)
Repair & reconstruction policy (1937-1941)		1.653***	-1.651***	-0.669***	-0.419***
		(0.0123)	(0.0145)	(0.0164)	(0.0160)
Japan occupation (1942-1945)		2.047***	-1.690***	-0.645***	-0.475***
		(0.0139)	(0.0165)	(0.0183)	(0.0179)
Republican war (1946-1949)		2.129***	-1.878***	-0.807***	-0.694***
		(0.0251)	(0.0268)	(0.0280)	(0.0278)
Exclusion of Madrasahs (1950-1966)		3.741***	-1.746***	-0.646***	-0.784***
		(0.0230)	(0.0263)	(0.0271)	(0.0274)
Nationalisation of private madrasahs (1967-1974)		5.331***	-1.618***	-0.634***	-0.824***
		(0.0231)	(0.0283)	(0.0283)	(0.0288)
Curriculum alignment (1975-1978)		5.460***	-2.214***	-1.354***	-1.417***
		(0.0235)	(0.0296)	(0.0293)	(0.0294)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		5.779***	-2.588***	-1.888***	-1.692***
		(0.0230)	(0.0303)	(0.0297)	(0.0294)
Religious Identity x Policy cohort					
Catholic x Expansion of subsidized village schools (1920-1930)		0.145***	0.145***	0.147***	0.155***
		(0.0136)	(0.0136)	(0.0136)	(0.0136)

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Catholic x Reduction of support for village schools (1931-1936)		0.255***	0.217***	0.228***	0.234***
		(0.0150)	(0.0149)	(0.0149)	(0.0149)
Catholic x Repair & reconstruction policy (1937-1941)		-0.267***	-0.312***	-0.300***	-0.296***
		(0.0176)	(0.0176)	(0.0176)	(0.0176)
Catholic x Japan occupation (1942-1945)		-0.648***	-0.673***	-0.665***	-0.658***
		(0.0199)	(0.0199)	(0.0198)	(0.0199)
Catholic x Republican war (1946-1949)		-0.306***	-0.314***	-0.307***	-0.296***
		(0.0348)	(0.0348)	(0.0348)	(0.0348)
Catholic x Exclusion of Madrasah (1950-1966)		0.111***	0.0664**	0.0745**	0.0796**
		(0.0317)	(0.0317)	(0.0316)	(0.0317)
Catholic x Nationalisation of private madrasah (1967-1974)		0.299***	0.274***	0.283***	0.290***
		(0.0320)	(0.0320)	(0.0319)	(0.0320)
Catholic x Curriculum alignment (1975-1978)		0.397***	0.373***	0.382***	0.388***
		(0.0328)	(0.0328)	(0.0327)	(0.0327)
Catholic x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.430***	0.405***	0.413***	0.420***
		(0.0318)	(0.0318)	(0.0318)	(0.0318)
Muslim x Expansion of subsidized village schools (1920-1930)		0.458***	0.457***	0.462***	0.482***
		(0.0106)	(0.0106)	(0.0105)	(0.0106)
Muslim x Reduction of support for village schools (1931-1936)		0.358***	0.268***	0.297***	0.316***
		(0.0115)	(0.0114)	(0.0114)	(0.0114)
Muslim x Repair & reconstruction policy (1937-1941)		-0.227***	-0.345***	-0.312***	-0.300***
		(0.0130)	(0.0131)	(0.0131)	(0.0131)
Muslim x Japan occupation (1942-1945)		-0.0503***	-0.132***	-0.106***	-0.0884***
		(0.0152)	(0.0152)	(0.0152)	(0.0152)
Muslim x Republican war (1946-1949)		-0.0804***	-0.112***	-0.0904***	-0.0616**
		(0.0271)	(0.0271)	(0.0270)	(0.0270)
Muslim x Exclusion of Madrasah (1950-1966)		0.626***	0.526***	0.551***	0.567***
		(0.0248)	(0.0248)	(0.0248)	(0.0248)
Muslim x Nationalisation of private madrasah (1967-1974)		1.129***	1.045***	1.071***	1.089***
		(0.0250)	(0.0250)	(0.0250)	(0.0250)

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Muslim x Curriculum alignment (1975-1978)		1.350***	1.274***	1.301***	1.317***
		(0.0254)	(0.0254)	(0.0254)	(0.0254)
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.451***	1.365***	1.390***	1.410***
		(0.0249)	(0.0249)	(0.0249)	(0.0249)
Female	-0.947***	-0.922***	-0.921***	-0.922***	-0.922***
	(0.00176)	(0.00167)	(0.00167)	(0.00167)	(0.00167)
Province of birth FE: Ref. West Nusa Tenggara					
East Nusa Tenggara	0.617***	0.518***	0.509***	0.508***	0.507***
	(0.00454)	(0.00431)	(0.00429)	(0.00429)	(0.00429)
West Kalimantan	0.465***	0.276***	0.257***	0.259***	0.260***
	(0.00424)	(0.00400)	(0.00398)	(0.00398)	(0.00398)
Central Kalimantan	1.836***	1.535***	1.507***	1.507***	1.508***
	(0.00538)	(0.00511)	(0.00509)	(0.00509)	(0.00509)
South Kalimantan	1.259***	1.243***	1.230***	1.230***	1.229***
	(0.00379)	(0.00352)	(0.00350)	(0.00350)	(0.00350)
East Kalimantan	2.326***	1.957***	1.930***	1.930***	1.932***
	(0.00502)	(0.00476)	(0.00474)	(0.00474)	(0.00473)
North Sulawesi	1.945***	1.868***	1.851***	1.856***	1.859***
	(0.00425)	(0.00407)	(0.00406)	(0.00406)	(0.00406)
Central Sulawesi	1.732***	1.541***	1.519***	1.522***	1.523***
	(0.00462)	(0.00443)	(0.00442)	(0.00442)	(0.00442)
South Sulawesi	1.191***	1.190***	1.185***	1.188***	1.188***
	(0.00315)	(0.00292)	(0.00290)	(0.00290)	(0.00290)
Southeast Sulawesi	1.517***	1.344***	1.329***	1.330***	1.332***
	(0.00531)	(0.00493)	(0.00491)	(0.00491)	(0.00491)
Maluku	2.327***	2.167***	2.152***	2.153***	2.154***
	(0.00458)	(0.00434)	(0.00433)	(0.00433)	(0.00433)
Year of Liberty			0.125***	0.111***	0.137***
			(0.000292)	(0.000282)	(0.000433)
Year of Liberty square				0.000618***	0.000764***
				(0.00000648)	(0.00000616)
Year of Liberty cubic					-0.0000231***
					(0.000000226)
Constant	1.596***	1.101***	5.117***	4.037***	3.920***
	(0.00506)	(0.00863)	(0.0128)	(0.0151)	(0.0148)
N	1840289	1840289	1840289	1840289	1840289
adj. R-square	0.238	0.313	0.318	0.319	0.319

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Appendix A4. Heterogeneous Liberty Dividends in Years of Schooling across Minority Status

Independent variable	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity: Ref. Protestant Majority (PM)					
Protestant minority (Pm)	-2.787***	-2.406***	-2.367***	-2.385***	-2.404***
	(0.00928)	(0.0158)	(0.0158)	(0.0157)	(0.0158)
Catholic Majority (KM)	-2.186***	-1.708***	-1.664***	-1.684***	-1.705***
	(0.00806)	(0.0143)	(0.0143)	(0.0143)	(0.0143)
Catholic minority (Km)	-0.983***	-1.677***	-1.744***	-1.717***	-1.688***
	(0.0153)	(0.0298)	(0.0296)	(0.0297)	(0.0298)
Muslim Majority (MM)	-3.249***	-3.291***	-3.217***	-3.254***	-3.293***
	(0.00922)	(0.0132)	(0.0133)	(0.0132)	(0.0132)
Muslim minority (Mm)	-1.358***	-1.360***	-1.389***	-1.378***	-1.369***
	(0.00728)	(0.0137)	(0.0136)	(0.0136)	(0.0137)
Female	-0.947***	-0.921***	-0.920***	-0.921***	-0.921***
	(0.00175)	(0.00167)	(0.00166)	(0.00166)	(0.00166)
Province of birth FE: Ref. West Nusa Tenggara					
East Nusa Tenggara	0.275***	0.133***	0.120***	0.119***	0.119***
	(0.00651)	(0.00626)	(0.00623)	(0.00623)	(0.00623)
West Kalimantan	-0.399***	-0.629***	-0.655***	-0.652***	-0.651***
	(0.00709)	(0.00680)	(0.00678)	(0.00678)	(0.00678)
Central Kalimantan	1.749***	1.435***	1.407***	1.408***	1.408***
	(0.00546)	(0.00520)	(0.00518)	(0.00518)	(0.00518)
South Kalimantan	1.257***	1.239***	1.226***	1.226***	1.225***
	(0.00378)	(0.00351)	(0.00350)	(0.00349)	(0.00349)
East Kalimantan	2.275***	1.893***	1.865***	1.865***	1.866***
	(0.00512)	(0.00487)	(0.00485)	(0.00484)	(0.00484)
North Sulawesi	0.161***	-0.00140	-0.0326***	-0.0265***	-0.0240***
	(0.00802)	(0.00773)	(0.00770)	(0.00770)	(0.00770)

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Central Sulawesi	1.668***	1.474***	1.453***	1.456***	1.457***
	(0.00468)	(0.00450)	(0.00448)	(0.00448)	(0.00448)
South Sulawesi	1.168***	1.168***	1.163***	1.165***	1.166***
	(0.00316)	(0.00293)	(0.00291)	(0.00291)	(0.00291)
Southeast Sulawesi	1.507***	1.327***	1.311***	1.313***	1.314***
	(0.00530)	(0.00493)	(0.00490)	(0.00490)	(0.00490)
Maluku	0.575***	0.349***	0.321***	0.323***	0.324***
	(0.00813)	(0.00780)	(0.00777)	(0.00777)	(0.00777)
Liberty	5.058***	1.513***	1.253***	1.285***	1.232***
	(0.00670)	(0.0315)	(0.0315)	(0.0315)	(0.0316)
Liberty x Protestant minority	0.847***	-0.309***	-0.321***	-0.320***	-0.322***
	(0.00911)	(0.0422)	(0.0422)	(0.0422)	(0.0422)
Liberty x Catholic majority	-0.442***	-0.817***	-0.819***	-0.819***	-0.819***
	(0.00840)	(0.0369)	(0.0369)	(0.0369)	(0.0369)
Liberty x Catholic minority	0.347***	-2.810***	-2.798***	-2.799***	-2.795***
	(0.0180)	(0.0792)	(0.0792)	(0.0792)	(0.0792)
Liberty x Muslim majority	0.457***	-0.970***	-0.947***	-0.950***	-0.945***
	(0.00702)	(0.0330)	(0.0330)	(0.0330)	(0.0330)
Liberty x Muslim minority	-0.160***	-0.944***	-0.915***	-0.919***	-0.914***
	(0.00839)	(0.0373)	(0.0373)	(0.0373)	(0.0373)
Policy Cohort: Ref. Establishment of self financed village schools (1906-1919)					
Expansion of subsidized village schools (1920-1930)		0.0687***	-1.484***	-0.920***	-0.542***
		(0.0142)	(0.0147)	(0.0154)	(0.0153)
Reduction of support for village schools (1931-1936)		0.988***	-1.570***	-0.739***	-0.382***
		(0.0166)	(0.0176)	(0.0187)	(0.0183)
Repair & reconstruction policy (1937-1941)		2.045***	-1.219***	-0.251***	0.00664

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0170)	(0.0186)	(0.0200)	(0.0196)
Japan occupation (1942-1945)		1.981***	-1.765***	-0.725***	-0.558***
		(0.0198)	(0.0216)	(0.0229)	(0.0226)
Republican war (1946-1949)		2.388***	-1.634***	-0.568***	-0.459***
		(0.0374)	(0.0385)	(0.0393)	(0.0391)
Exclusion of Madrassahs (1950-1966)		3.620***	-1.874***	-0.778***	-0.922***
		(0.0340)	(0.0363)	(0.0368)	(0.0371)
Nationalisation of private madrassahs (1967-1974)		5.117***	-1.854***	-0.874***	-1.072***
		(0.0342)	(0.0379)	(0.0378)	(0.0382)
Curriculum alignment (1975-1978)		5.171***	-2.536***	-1.681***	-1.750***
		(0.0348)	(0.0392)	(0.0389)	(0.0390)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		5.391***	-3.012***	-2.317***	-2.123***
		(0.0342)	(0.0394)	(0.0389)	(0.0387)
Religious Identity x Policy Cohort:					
Pm x Expansion of subsidized village schools (1920-1930)		-0.285***	-0.260***	-0.260***	-0.245***
		(0.0190)	(0.0191)	(0.0190)	(0.0190)
Pm x Reduction of support for village schools (1931-1936)		-0.938***	-0.973***	-0.954***	-0.934***
		(0.0215)	(0.0214)	(0.0213)	(0.0213)
Pm x Repair & reconstruction policy (1937-1941)		-0.601***	-0.736***	-0.700***	-0.694***
		(0.0237)	(0.0238)	(0.0237)	(0.0238)
Pm x Japan occupation (1942-1945)		0.322***	0.279***	0.300***	0.323***
		(0.0271)	(0.0272)	(0.0271)	(0.0271)
Pm x Republican war (1946-1949)		-0.221***	-0.255***	-0.235***	-0.211***
		(0.0500)	(0.0500)	(0.0499)	(0.0499)
Pm x Exclusion of Madrassah (1950-1966)		0.458***	0.393***	0.413***	0.433***
		(0.0457)	(0.0457)	(0.0457)	(0.0457)

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Pm x Nationalisation of private madrassah (1967-1974)		0.640***	0.586***	0.606***	0.629***
		(0.0459)	(0.0460)	(0.0459)	(0.0459)
Pm x Curriculum alignment (1975-1978)		0.779***	0.738***	0.759***	0.782***
		(0.0467)	(0.0468)	(0.0467)	(0.0467)
Pm x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.962***	0.920***	0.940***	0.963***
		(0.0458)	(0.0458)	(0.0458)	(0.0458)
KM x Expansion of subsidized village schools (1920-1930)		-0.118***	-0.0985***	-0.0975***	-0.0776***
		(0.0172)	(0.0172)	(0.0171)	(0.0172)
KM x Reduction of support for village schools (1931-1936)		-0.595***	-0.662***	-0.637***	-0.616***
		(0.0196)	(0.0195)	(0.0195)	(0.0195)
KM x Repair & reconstruction policy (1937-1941)		-0.847***	-0.970***	-0.936***	-0.924***
		(0.0214)	(0.0214)	(0.0213)	(0.0214)
KM x Japan occupation (1942-1945)		-1.063***	-1.117***	-1.094***	-1.071***
		(0.0242)	(0.0242)	(0.0242)	(0.0242)
KM x Republican war (1946-1949)		-1.078***	-1.106***	-1.085***	-1.056***
		(0.0444)	(0.0443)	(0.0443)	(0.0443)
KM x Exclusion of Madrassah (1950-1966)		-0.391***	-0.482***	-0.460***	-0.440***
		(0.0403)	(0.0403)	(0.0403)	(0.0403)
KM x Nationalisation of private madrassah (1967-1974)		-0.0644	-0.124***	-0.101**	-0.0771*
		(0.0407)	(0.0407)	(0.0407)	(0.0407)
KM x Curriculum alignment (1975-1978)		0.135***	0.0828**	0.106**	0.129***
		(0.0417)	(0.0417)	(0.0416)	(0.0417)
KM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.322***	0.266***	0.289***	0.313***
		(0.0406)	(0.0406)	(0.0406)	(0.0406)

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Km x Expansion of subsidized village schools (1920-1930)		0.0662*	0.0730*	0.0625	0.0367
		(0.0384)	(0.0380)	(0.0380)	(0.0382)
Km x Reduction of support for village schools (1931-1936)		0.809***	0.891***	0.860***	0.834***
		(0.0412)	(0.0408)	(0.0408)	(0.0409)
Km x Repair & reconstruction policy (1937-1941)		0.570***	0.577***	0.559***	0.523***
		(0.0475)	(0.0474)	(0.0474)	(0.0475)
Km x Japan occupation (1942-1945)		2.747***	2.792***	2.768***	2.737***
		(0.0497)	(0.0496)	(0.0496)	(0.0497)
Km x Republican war (1946-1949)		2.633***	2.683***	2.659***	2.629***
		(0.0965)	(0.0963)	(0.0963)	(0.0963)
Km x Exclusion of Madrassah (1950-1966)		3.919***	3.965***	3.941***	3.911***
		(0.0865)	(0.0864)	(0.0864)	(0.0865)
Km x Nationalisation of private madrassah (1967-1974)		3.873***	3.911***	3.886***	3.855***
		(0.0868)	(0.0868)	(0.0868)	(0.0868)
Km x Curriculum alignment (1975-1978)		3.905***	3.955***	3.932***	3.900***
		(0.0883)	(0.0883)	(0.0883)	(0.0883)
Km x Partial nationalisation of (former) Christian Mission schools (1979-1985)		3.833***	3.884***	3.862***	3.828***
		(0.0867)	(0.0866)	(0.0866)	(0.0867)
MM x Expansion of subsidized village schools (1920-1930)		0.244***	0.239***	0.251***	0.286***
		(0.0147)	(0.0147)	(0.0147)	(0.0147)
MM x Reduction of support for village schools (1931-1936)		-0.269***	-0.392***	-0.347***	-0.310***
		(0.0170)	(0.0170)	(0.0170)	(0.0170)

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
MM x Repair & reconstruction policy (1937-1941)		-0.667***	-0.871***	-0.813***	-0.791***
		(0.0176)	(0.0176)	(0.0176)	(0.0176)
MM x Japan occupation (1942-1945)		-0.0482**	-0.168***	-0.124***	-0.0882***
		(0.0208)	(0.0209)	(0.0208)	(0.0209)
MM x Republican war (1946-1949)		-0.438***	-0.498***	-0.460***	-0.411***
		(0.0389)	(0.0389)	(0.0389)	(0.0389)
MM x Exclusion of Madrassah (1950-1966)		0.811***	0.662***	0.705***	0.738***
		(0.0355)	(0.0356)	(0.0355)	(0.0356)
MM x Nationalisation of private madrassah (1967-1974)		1.474***	1.346***	1.388***	1.425***
		(0.0357)	(0.0358)	(0.0358)	(0.0358)
MM x Curriculum alignment (1975-1978)		1.799***	1.687***	1.731***	1.766***
		(0.0364)	(0.0364)	(0.0364)	(0.0364)
MM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.985***	1.861***	1.903***	1.942***
		(0.0357)	(0.0358)	(0.0357)	(0.0357)
Mm x Expansion of subsidized village schools (1920-1930)		0.300***	0.421***	0.382***	0.367***
		(0.0179)	(0.0179)	(0.0178)	(0.0179)
Mm x Reduction of support for village schools (1931-1936)		-0.487***	-0.479***	-0.486***	-0.497***
		(0.0200)	(0.0199)	(0.0199)	(0.0199)
Mm x Repair & reconstruction policy (1937-1941)		0.000456	-0.0595***	-0.0556**	-0.0787***
		(0.0217)	(0.0217)	(0.0217)	(0.0217)
Mm x Japan occupation (1942-1945)		0.135***	0.133***	0.127***	0.113***
		(0.0244)	(0.0243)	(0.0243)	(0.0244)
Mm x Republican war (1946-1949)		0.116***	0.146***	0.137***	0.131***
		(0.0446)	(0.0445)	(0.0445)	(0.0445)

Independent variable	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Mm x Exclusion of Madrassah (1950-1966)		0.343***	0.301***	0.294***	0.276***
		(0.0406)	(0.0405)	(0.0405)	(0.0406)
Mm x Nationalisation of private madrassah (1967-1974)		0.680***	0.666***	0.659***	0.647***
		(0.0408)	(0.0408)	(0.0408)	(0.0408)
Mm x Curriculum alignment (1975-1978)		0.867***	0.868***	0.863***	0.849***
		(0.0415)	(0.0415)	(0.0415)	(0.0415)
Mm x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.109***	1.101***	1.094***	1.083***
		(0.0407)	(0.0407)	(0.0407)	(0.0407)
Year of Liberty			0.126***	0.112***	0.138***
			(0.000291)	(0.000280)	(0.000432)
Year of Liberty square				0.000619***	0.000769***
				(0.00000644)	(0.00000611)
Year of Liberty cubic					-0.0000235***
					(0.000000225)
Constant	3.979***	3.254***	7.289***	6.214***	6.097***
	(0.00955)	(0.0133)	(0.0162)	(0.0180)	(0.0177)
N	1840289	1840289	1840289	1840289	1840289
adj. R-square	0.243	0.319	0.325	0.325	0.325

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Appendix A5. Heterogeneous Liberty Dividends in Years of Schooling across Gender and Minority Status

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Religious identity:					
Ref. Protestant Majority, Male (PMM)					
Protestant Majority, Female (PMF)	-2.832***	-2.236***	-2.198***	-2.217***	-2.241***
	(0.0127)	(0.0256)	(0.0256)	(0.0255)	(0.0256)
Protestant minority, Male (PmM)	-1.357***	-0.798***	-0.766***	-0.781***	-0.803***
	(0.0109)	(0.0221)	(0.0221)	(0.0221)	(0.0221)
Protestant minority, Female (PmF)	-4.068***	-3.366***	-3.291***	-3.325***	-3.362***
	(0.0113)	(0.0199)	(0.0201)	(0.0199)	(0.0199)
Catholic Majority, Male (KMM)	-2.418***	-1.458***	-1.413***	-1.435***	-1.469***
	(0.0108)	(0.0222)	(0.0222)	(0.0221)	(0.0222)
Catholic Majority, Female (KMF)	-1.076***	-1.688***	-1.627***	-1.653***	-1.682***
	(0.0223)	(0.0470)	(0.0474)	(0.0472)	(0.0471)
Catholic minority, Male (KmM)	-3.285***	-2.753***	-2.675***	-2.708***	-2.742***
	(0.0102)	(0.0191)	(0.0191)	(0.0191)	(0.0191)
Catholic minority, Female (KmF)	-2.221***	-2.466***	-2.618***	-2.558***	-2.499***
	(0.0205)	(0.0385)	(0.0374)	(0.0377)	(0.0383)
Muslim Majority, Male (MMM)	-3.303***	-3.304***	-3.230***	-3.268***	-3.312***
	(0.0111)	(0.0189)	(0.0189)	(0.0189)	(0.0189)
Muslim Majority, Female (MMF)	-1.302***	-1.313***	-1.403***	-1.368***	-1.335***
	(0.0105)	(0.0213)	(0.0211)	(0.0211)	(0.0212)
Muslim minority, Male (MmM)	-4.524***	-4.090***	-3.980***	-4.033***	-4.093***
	(0.0109)	(0.0184)	(0.0184)	(0.0184)	(0.0184)
Muslim minority, Female (MmF)	-2.762***	-2.193***	-2.133***	-2.160***	-2.196***
	(0.00979)	(0.0197)	(0.0196)	(0.0196)	(0.0196)
Liberty	4.424***	1.503***	1.234***	1.267***	1.212***
	(0.00959)	(0.0450)	(0.0451)	(0.0451)	(0.0451)
Liberty x Religious identity:					
Liberty x Protestant Majority, Female (PMF)	1.230***	-0.512***	-0.507***	-0.508***	-0.507***
	(0.0136)	(0.0648)	(0.0648)	(0.0648)	(0.0648)
Liberty x Protestant minority, Male (PmM)	1.315***	0.0362	0.0540	0.0514	0.0548

Independent variable:	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
	Liberty	*Policy*	*Robust 1*	*Robust 2*	*Robust 3*
	(0.0133)	(0.0627)	(0.0627)	(0.0627)	(0.0627)
Liberty x Protestant minority, Female (PmF)	1.729***	-0.0488	-0.0599	-0.0593	-0.0608
	(0.0123)	(0.0563)	(0.0563)	(0.0563)	(0.0563)
Liberty x Catholic Majority, Male (KMM)	0.227***	-0.869***	-0.869***	-0.869***	-0.868***
	(0.0123)	(0.0539)	(0.0539)	(0.0539)	(0.0539)
Liberty x Catholic Majority, Female (KMF)	0.636***	-2.838***	-2.820***	-2.822***	-2.816***
	(0.0263)	(0.119)	(0.119)	(0.119)	(0.119)
Liberty x Catholic minority, Male (KmM)	0.154***	-0.785***	-0.771***	-0.773***	-0.770***
	(0.0116)	(0.0515)	(0.0515)	(0.0515)	(0.0515)
Liberty x Catholic minority, Female (KmF)	1.317***	-2.731***	-2.707***	-2.710***	-2.705***
	(0.0248)	(0.106)	(0.106)	(0.106)	(0.106)
Liberty x Muslim Majority, Male (MMM)	0.987***	-0.608***	-0.570***	-0.575***	-0.567***
	(0.0101)	(0.0479)	(0.0479)	(0.0479)	(0.0479)
Liberty x Muslim Majority, Female (MMF)	0.0959***	-1.116***	-1.092***	-1.095***	-1.091***
	(0.0122)	(0.0523)	(0.0523)	(0.0523)	(0.0523)
Liberty x Muslim minority, Male (MmM)	1.190***	-1.215***	-1.188***	-1.191***	-1.186***
	(0.00993)	(0.0464)	(0.0464)	(0.0464)	(0.0464)
Liberty x Muslim minority, Female (MmF)	0.866***	-0.879***	-0.827***	-0.834***	-0.825***
	(0.0116)	(0.0542)	(0.0542)	(0.0542)	(0.0542)
Policy Cohort:					
Ref. Establishment of self financed village schools (1906-1919)					
Expansion of subsidized village schools (1920-1930)		0.255***	-1.273***	-0.725***	-0.355***
		(0.0214)	(0.0218)	(0.0221)	(0.0220)
Reduction of support for village schools (1931-1936)		1.787***	-0.744***	0.0686***	0.420***
		(0.0252)	(0.0257)	(0.0264)	(0.0261)
Repair & reconstruction policy (1937-1941)		2.168***	-1.068***	-0.119***	0.133***
		(0.0243)	(0.0254)	(0.0263)	(0.0260)
Japan occupation (1942-1945)		1.946***	-1.773***	-0.752***	-0.591***
		(0.0296)	(0.0309)	(0.0317)	(0.0315)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Republican war (1946-1949)		2.246***	-1.754***	-0.707***	-0.606***
		(0.0536)	(0.0544)	(0.0549)	(0.0548)
Exclusion of Madrassahs (1950-1966)		3.434***	-2.037***	-0.960***	-1.114***
		(0.0490)	(0.0506)	(0.0509)	(0.0511)
Nationalisation of private madrassahs (1967-1974)		4.674***	-2.271***	-1.310***	-1.517***
		(0.0492)	(0.0518)	(0.0517)	(0.0520)
Curriculum alignment (1975-1978)		4.696***	-2.984***	-2.145***	-2.223***
		(0.0500)	(0.0531)	(0.0528)	(0.0529)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		4.858***	-3.517***	-2.837***	-2.649***
		(0.0492)	(0.0529)	(0.0525)	(0.0524)
Religious Identity x Policy Cohort:					
PMF x Expansion of subsidized village schools (1920-1930)		-0.923***	-0.866***	-0.874***	-0.854***
		(0.0307)	(0.0307)	(0.0306)	(0.0307)
PMF x Reduction of support for village schools (1931-1936)		-1.592***	-1.630***	-1.610***	-1.584***
		(0.0345)	(0.0343)	(0.0343)	(0.0343)
PMF x Repair & reconstruction policy (1937-1941)		-0.314***	-0.449***	-0.412***	-0.402***
		(0.0371)	(0.0372)	(0.0372)	(0.0372)
PMF x Japan occupation (1942-1945)		1.146***	1.088***	1.111***	1.137***
		(0.0431)	(0.0431)	(0.0431)	(0.0431)
PMF x Republican war (1946-1949)		0.732***	0.679***	0.702***	0.729***
		(0.0768)	(0.0767)	(0.0767)	(0.0767)
PMF x Exclusion of Madrassah (1950-1966)		0.982***	0.902***	0.925***	0.947***
		(0.0707)	(0.0707)	(0.0707)	(0.0707)
PMF x Nationalisation of private madrassah (1967-1974)		1.075***	1.009***	1.031***	1.057***
		(0.0710)	(0.0710)	(0.0710)	(0.0710)
PMF x Curriculum alignment (1975-1978)		0.968***	0.911***	0.934***	0.960***
		(0.0720)	(0.0720)	(0.0720)	(0.0720)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
PMF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.047***	0.990***	1.013***	1.038***
		(0.0708)	(0.0708)	(0.0708)	(0.0709)
PmM x Expansion of subsidized village schools (1920-1930)		-0.386***	-0.434***	-0.413***	-0.389***
		(0.0285)	(0.0286)	(0.0285)	(0.0286)
PmM x Reduction of support for village schools (1931-1936)		-1.667***	-1.719***	-1.698***	-1.678***
		(0.0329)	(0.0327)	(0.0327)	(0.0327)
PmM x Repair & reconstruction policy (1937-1941)		-0.257***	-0.313***	-0.293***	-0.275***
		(0.0342)	(0.0343)	(0.0342)	(0.0342)
PmM x Japan occupation (1942-1945)		0.0903**	0.0412	0.0585	0.0774*
		(0.0395)	(0.0396)	(0.0395)	(0.0396)
PmM x Republican war (1946-1949)		0.269***	0.229***	0.246***	0.267***
		(0.0745)	(0.0744)	(0.0744)	(0.0744)
PmM x Exclusion of Madrassah (1950-1966)		0.385***	0.343***	0.361***	0.381***
		(0.0678)	(0.0678)	(0.0678)	(0.0678)
PmM x Nationalisation of private madrassah (1967-1974)		0.911***	0.867***	0.885***	0.903***
		(0.0681)	(0.0682)	(0.0681)	(0.0681)
PmM x Curriculum alignment (1975-1978)		0.972***	0.923***	0.941***	0.959***
		(0.0693)	(0.0694)	(0.0693)	(0.0694)
PmM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.099***	1.051***	1.070***	1.088***
		(0.0681)	(0.0682)	(0.0682)	(0.0682)
PmF x Expansion of subsidized village schools (1920-1930)		-0.0251	-0.0808***	-0.0524**	-0.0153
		(0.0249)	(0.0250)	(0.0249)	(0.0248)
PmF x Reduction of support for village schools (1931-1936)		-1.906***	-1.991***	-1.954***	-1.916***

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0284)	(0.0284)	(0.0283)	(0.0283)
PmF x Repair & reconstruction policy (1937-1941)		-1.115***	-1.302***	-1.248***	-1.227***
		(0.0301)	(0.0303)	(0.0302)	(0.0302)
PmF x Japan occupation (1942-1945)		-0.258***	-0.338***	-0.301***	-0.260***
		(0.0362)	(0.0363)	(0.0362)	(0.0362)
PmF x Republican war (1946-1949)		-0.875***	-0.933***	-0.898***	-0.853***
		(0.0667)	(0.0667)	(0.0667)	(0.0666)
PmF x Exclusion of Madrassah (1950-1966)		0.249***	0.155**	0.192***	0.230***
		(0.0609)	(0.0609)	(0.0609)	(0.0609)
PmF x Nationalisation of private madrassah (1967-1974)		1.054***	0.966***	1.001***	1.043***
		(0.0613)	(0.0613)	(0.0613)	(0.0613)
PmF x Curriculum alignment (1975-1978)		1.515***	1.439***	1.476***	1.516***
		(0.0624)	(0.0624)	(0.0624)	(0.0624)
PmF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.912***	1.833***	1.869***	1.910***
		(0.0611)	(0.0611)	(0.0611)	(0.0611)
KMM x Expansion of subsidized village schools (1920-1930)		-0.743***	-0.758***	-0.744***	-0.709***
		(0.0266)	(0.0267)	(0.0266)	(0.0266)
KMM x Reduction of support for village schools (1931-1936)		-1.503***	-1.578***	-1.549***	-1.516***
		(0.0307)	(0.0306)	(0.0306)	(0.0306)
KMM x Repair & reconstruction policy (1937-1941)		-1.148***	-1.290***	-1.250***	-1.229***
		(0.0319)	(0.0319)	(0.0319)	(0.0319)
KMM x Japan occupation (1942-1945)		-1.282***	-1.340***	-1.314***	-1.279***
		(0.0364)	(0.0364)	(0.0364)	(0.0364)
KMM x Republican war (1946-1949)		-0.716***	-0.730***	-0.707***	-0.663***
		(0.0652)	(0.0651)	(0.0651)	(0.0651)
KMM x Exclusion of Madrassah (1950-1966)		0.0126	-0.0760	-0.0504	-0.0190

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0595)	(0.0595)	(0.0595)	(0.0595)
KMM x Nationalisation of private madrassah (1967-1974)		0.329***	0.270***	0.297***	0.331***
		(0.0599)	(0.0599)	(0.0599)	(0.0599)
KMM x Curriculum alignment (1975-1978)		0.286***	0.231***	0.258***	0.292***
		(0.0613)	(0.0613)	(0.0612)	(0.0613)
KMM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.343***	0.287***	0.313***	0.348***
		(0.0598)	(0.0598)	(0.0598)	(0.0598)
KMF x Expansion of subsidized village schools (1920-1930)		0.101*	-0.0443	0.00493	0.0367
		(0.0571)	(0.0573)	(0.0571)	(0.0571)
KMF x Reduction of support for village schools (1931-1936)		0.498***	0.423***	0.451***	0.479***
		(0.0642)	(0.0640)	(0.0640)	(0.0639)
KMF x Repair & reconstruction policy (1937-1941)		0.855***	0.744***	0.779***	0.800***
		(0.0764)	(0.0768)	(0.0766)	(0.0766)
KMF x Japan occupation (1942-1945)		3.132***	3.042***	3.072***	3.096***
		(0.0761)	(0.0763)	(0.0761)	(0.0761)
KMF x Republican war (1946-1949)		3.444***	3.349***	3.380***	3.402***
		(0.145)	(0.145)	(0.145)	(0.145)
KMF x Exclusion of Madrassah (1950-1966)		4.198***	4.106***	4.136***	4.160***
		(0.130)	(0.130)	(0.130)	(0.130)
KMF x Nationalisation of private madrassah (1967-1974)		4.063***	3.972***	4.001***	4.026***
		(0.130)	(0.131)	(0.130)	(0.130)
KMF x Curriculum alignment (1975-1978)		4.059***	3.976***	4.007***	4.029***
		(0.132)	(0.132)	(0.132)	(0.132)
KMF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		3.909***	3.826***	3.857***	3.879***
		(0.130)	(0.131)	(0.130)	(0.130)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
KmM x Expansion of subsidized village schools (1920-1930)		0.132***	0.134***	0.143***	0.174***
		(0.0238)	(0.0238)	(0.0237)	(0.0237)
KmM x Reduction of support for village schools (1931-1936)		-1.270***	-1.385***	-1.343***	-1.311***
		(0.0273)	(0.0272)	(0.0272)	(0.0272)
KmM x Repair & reconstruction policy (1937-1941)		-0.781***	-0.939***	-0.892***	-0.868***
		(0.0285)	(0.0285)	(0.0285)	(0.0285)
KmM x Japan occupation (1942-1945)		-0.744***	-0.848***	-0.809***	-0.776***
		(0.0345)	(0.0345)	(0.0344)	(0.0345)
KmM x Republican war (1946-1949)		-1.141***	-1.229***	-1.191***	-1.155***
		(0.0615)	(0.0615)	(0.0615)	(0.0615)
KmM x Exclusion of Madrassah (1950-1966)		-0.367***	-0.506***	-0.468***	-0.439***
		(0.0561)	(0.0560)	(0.0560)	(0.0561)
KmM x Nationalisation of private madrassah (1967-1974)		0.482***	0.373***	0.411***	0.445***
		(0.0566)	(0.0566)	(0.0566)	(0.0566)
KmM x Curriculum alignment (1975-1978)		0.981***	0.877***	0.916***	0.949***
		(0.0579)	(0.0579)	(0.0579)	(0.0579)
KmM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.403***	1.297***	1.335***	1.369***
		(0.0565)	(0.0565)	(0.0565)	(0.0565)
KmF x Expansion of subsidized village schools (1920-1930)		-0.418***	-0.307***	-0.355***	-0.409***
		(0.0529)	(0.0517)	(0.0520)	(0.0524)
KmF x Reduction of support for village schools (1931-1936)		-0.406***	-0.233***	-0.298***	-0.353***
		(0.0541)	(0.0530)	(0.0533)	(0.0537)
KmF x Repair & reconstruction policy (1937-1941)		0.139**	0.207***	0.160***	0.0906
		(0.0601)	(0.0593)	(0.0596)	(0.0599)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
KmF x Japan occupation (1942-1945)		2.434***	2.555***	2.500***	2.437***
		(0.0656)	(0.0651)	(0.0653)	(0.0656)
KmF x Republican war (1946-1949)		2.137***	2.279***	2.222***	2.165***
		(0.129)	(0.129)	(0.129)	(0.129)
KmF x Exclusion of Madrassah (1950-1966)		3.976***	4.109***	4.054***	3.993***
		(0.116)	(0.115)	(0.116)	(0.116)
KmF x Nationalisation of private madrassah (1967-1974)		4.535***	4.646***	4.590***	4.529***
		(0.116)	(0.116)	(0.116)	(0.116)
KmF x Curriculum alignment (1975-1978)		4.668***	4.794***	4.740***	4.676***
		(0.119)	(0.118)	(0.118)	(0.119)
KmF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		4.761***	4.888***	4.835***	4.769***
		(0.116)	(0.116)	(0.116)	(0.116)
MMM x Expansion of subsidized village schools (1920-1930)		0.247***	0.219***	0.240***	0.282***
		(0.0224)	(0.0224)	(0.0224)	(0.0224)
MMM x Reduction of support for village schools (1931-1936)		-0.819***	-0.960***	-0.910***	-0.870***
		(0.0260)	(0.0259)	(0.0259)	(0.0259)
MMM x Repair & reconstruction policy (1937-1941)		-0.431***	-0.634***	-0.575***	-0.548***
		(0.0255)	(0.0255)	(0.0255)	(0.0255)
MMM x Japan occupation (1942-1945)		0.354***	0.220***	0.266***	0.304***
		(0.0316)	(0.0317)	(0.0317)	(0.0317)
MMM x Republican war (1946-1949)		-0.0312	-0.108*	-0.0668	-0.0163
		(0.0567)	(0.0567)	(0.0567)	(0.0567)
MMM x Exclusion of Madrassah (1950-1966)		1.054***	0.897***	0.943***	0.978***
		(0.0520)	(0.0520)	(0.0520)	(0.0520)
MMM x Nationalisation of private madrassah (1967-1974)		1.663***	1.523***	1.569***	1.607***

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0522)	(0.0522)	(0.0522)	(0.0522)
MMM x Curriculum alignment (1975-1978)		1.738***	1.611***	1.659***	1.695***
		(0.0530)	(0.0531)	(0.0530)	(0.0530)
MMM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.824***	1.690***	1.735***	1.774***
		(0.0522)	(0.0522)	(0.0522)	(0.0522)
MMF x Expansion of subsidized village schools (1920-1930)		0.517***	0.709***	0.642***	0.604***
		(0.0276)	(0.0275)	(0.0275)	(0.0276)
MMF x Reduction of support for village schools (1931-1936)		-1.202***	-1.146***	-1.174***	-1.209***
		(0.0309)	(0.0307)	(0.0307)	(0.0308)
MMF x Repair & reconstruction policy (1937-1941)		0.0561*	0.0593*	0.0387	-0.00695
		(0.0316)	(0.0315)	(0.0315)	(0.0316)
MMF x Japan occupation (1942-1945)		0.791***	0.854***	0.823***	0.787***
		(0.0364)	(0.0363)	(0.0363)	(0.0364)
MMF x Republican war (1946-1949)		0.978***	1.067***	1.035***	1.005***
		(0.0635)	(0.0634)	(0.0634)	(0.0634)
MMF x Exclusion of Madrassah (1950-1966)		0.894***	0.920***	0.889***	0.848***
		(0.0576)	(0.0576)	(0.0576)	(0.0576)
MMF x Nationalisation of private madrassah (1967-1974)		1.224***	1.278***	1.246***	1.211***
		(0.0579)	(0.0578)	(0.0578)	(0.0579)
MMF x Curriculum alignment (1975-1978)		1.193***	1.262***	1.232***	1.195***
		(0.0589)	(0.0588)	(0.0588)	(0.0589)
MMF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.410***	1.472***	1.441***	1.405***
		(0.0578)	(0.0577)	(0.0577)	(0.0578)
MmM x Expansion of subsidized village schools (1920-1930)		-0.133***	-0.164***	-0.139***	-0.0849***

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0216)	(0.0217)	(0.0216)	(0.0216)
MmM x Reduction of support for village schools (1931-1936)		-1.309***	-1.469***	-1.408***	-1.351***
		(0.0254)	(0.0253)	(0.0253)	(0.0253)
MmM x Repair & reconstruction policy (1937-1941)		-1.132***	-1.391***	-1.314***	-1.275***
		(0.0248)	(0.0248)	(0.0247)	(0.0247)
MmM x Japan occupation (1942-1945)		-0.347***	-0.505***	-0.446***	-0.390***
		(0.0305)	(0.0306)	(0.0306)	(0.0306)
MmM x Republican war (1946-1949)		-0.540***	-0.628***	-0.574***	-0.503***
		(0.0551)	(0.0550)	(0.0550)	(0.0550)
MmM x Exclusion of Madrassah (1950-1966)		0.850***	0.664***	0.723***	0.776***
		(0.0504)	(0.0504)	(0.0504)	(0.0504)
MmM x Nationalisation of private madrassah (1967-1974)		2.071***	1.907***	1.965***	2.022***
		(0.0507)	(0.0507)	(0.0507)	(0.0507)
MmM x Curriculum alignment (1975-1978)		2.702***	2.550***	2.611***	2.666***
		(0.0515)	(0.0515)	(0.0515)	(0.0515)
MmM x Partial nationalisation of (former) Christian Mission schools (1979-1985)		3.091***	2.928***	2.985***	3.045***
		(0.0506)	(0.0507)	(0.0506)	(0.0506)
MmF x Expansion of subsidized village schools (1920-1930)		-0.325***	-0.319***	-0.312***	-0.279***
		(0.0249)	(0.0249)	(0.0249)	(0.0249)
MmF x Reduction of support for village schools (1931-1936)		-1.367***	-1.455***	-1.422***	-1.389***
		(0.0285)	(0.0284)	(0.0284)	(0.0284)
MmF x Repair & reconstruction policy (1937-1941)		-0.338***	-0.513***	-0.466***	-0.449***
		(0.0301)	(0.0300)	(0.0300)	(0.0300)
MmF x Japan occupation (1942-1945)		-0.520***	-0.633***	-0.598***	-0.571***
		(0.0351)	(0.0350)	(0.0350)	(0.0351)

Independent variable:	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
	Liberty	*Policy*	*Robust 1*	*Robust 2*	*Robust 3*
MmF x Republican war (1946-1949)		-0.256***	-0.325***	-0.293***	-0.256***
		(0.0640)	(0.0639)	(0.0639)	(0.0639)
MmF x Exclusion of Madrassah (1950-1966)		0.292***	0.142**	0.176***	0.199***
		(0.0587)	(0.0587)	(0.0587)	(0.0587)
MmF x Nationalisation of private madrassah (1967-1974)		1.154***	1.030***	1.064***	1.092***
		(0.0590)	(0.0590)	(0.0590)	(0.0590)
MmF x Curriculum alignment (1975-1978)		1.616***	1.505***	1.541***	1.568***
		(0.0600)	(0.0600)	(0.0599)	(0.0600)
MmF x Partial nationalisation of (former) Christian Mission schools (1979-1985)		1.990***	1.868***	1.901***	1.932***
		(0.0589)	(0.0589)	(0.0589)	(0.0589)
Province of birth FE:					
Ref. West Nusa Tenggara					
East Nusa Tenggara	0.275***	0.125***	0.112***	0.111***	0.111***
	(0.00650)	(0.00624)	(0.00622)	(0.00622)	(0.00622)
West Kalimantan	-0.401***	-0.638***	-0.664***	-0.661***	-0.660***
	(0.00709)	(0.00679)	(0.00676)	(0.00676)	(0.00676)
Central Kalimantan	1.748***	1.437***	1.409***	1.409***	1.410***
	(0.00546)	(0.00519)	(0.00517)	(0.00517)	(0.00517)
South Kalimantan	1.256***	1.247***	1.234***	1.234***	1.233***
	(0.00378)	(0.00350)	(0.00349)	(0.00349)	(0.00349)
East Kalimantan	2.274***	1.914***	1.885***	1.885***	1.886***
	(0.00513)	(0.00485)	(0.00483)	(0.00483)	(0.00483)
North Sulawesi	0.159***	-0.00929	-0.0401***	-0.0342***	-0.0317***
	(0.00802)	(0.00772)	(0.00769)	(0.00769)	(0.00769)
Central Sulawesi	1.668***	1.477***	1.456***	1.459***	1.459***
	(0.00468)	(0.00448)	(0.00447)	(0.00447)	(0.00447)
South Sulawesi	1.170***	1.178***	1.173***	1.175***	1.175***
	(0.00316)	(0.00292)	(0.00291)	(0.00291)	(0.00291)
Southeast Sulawesi	1.508***	1.339***	1.323***	1.325***	1.326***
	(0.00530)	(0.00491)	(0.00489)	(0.00488)	(0.00488)

Independent variable:	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
	Liberty	*Policy*	*Robust 1*	*Robust 2*	*Robust 3*
Maluku	0.579***	0.344***	0.316***	0.318***	0.319***
	(0.00813)	(0.00778)	(0.00775)	(0.00775)	(0.00775)
Year of Liberty			0.126***	0.112***	0.139***
			(0.000291)	(0.000280)	(0.000431)
Year of Liberty square				0.000613***	0.000765***
				(0.00000643)	(0.00000610)
Year of Liberty cubic					-0.0000237***
					(0.000000224)
Constant	4.171***	3.193***	7.210***	6.153***	6.045***
	(0.0111)	(0.0185)	(0.0207)	(0.0219)	(0.0217)
N	1840289	1840289	1840289	1840289	1840289
adj. R-square	0.244	0.323	0.329	0.329	0.329

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Appendix A6. Estimation using Sub Sample with Parent's Information

We run estimation for sub-sample with parent's estimation. As mentioned previously, this sub-sample is derived from households where child cohabitates with mother or father. Size wise, this sub-sample is less than 13 percent of the full sample. The descriptive statistics in Appendix A1 shows that those who cohabitate with either mother or father have higher years of schooling than the rest of the population. This higher educational attainment of sub-sample is possible because they are economically richer than the rest of the population, or those mothers and fathers have a higher life expectancy. Therefore, the estimation results may differ from that of the full sample. The results are presented in Appendix A7 through A10. Appendix A7 and A9 are from re-estimation of Equation [4.1] and [4-2] for subsample with mother's and father's information, respectively. Meanwhile, Appendix A8 and A10 are from estimation for subsample with mother's and father's information, respectively, but adding mother's or father's educational attainment into Equation [4.1] and [4-2]. For comparison with the estimation results from the full sample, the summaries for the subsample are presented in Table 4.5 for the Liberty Model and in Table 4.6 for the Policy Model.

The results from the Liberty Model in Table A6.1 show that the signs are robust: the Muslim variable stays negative, the Liberty variable stays positive, and their interaction term stays positive. However, the magnitudes of the Muslim liberty advantage over the Christian are around six times higher than that in the full sample with or without augmenting the Equation [4.1] with mother's or father's years of schooling. The increases in liberty dividend for Muslim exist despite the positive signs for all coefficients for parent's years of schooling. This higher liberty divided for Muslim is robust across the sub-sample and estimation.

The results from the Policy Model in Table A6.2 indicate that the sub-sample with mother's information is not sensitive to the pro-Muslim policies. This behavior is represented by the high and positive magnitude of the coefficient for *Liberty x Muslim* variable net of policy effects. Meanwhile, the sub-sample with father's information is sensitive to the pro-Muslim policy but at a lower magnitude of sensitivity compared to the behavior of the full sample. Given the limitation of the information in the dataset, we are unable to speculate on what causes this different behavior.

Table A6.1: Liberty Model: Comparison of estimation results for the full sample and sub-sample with parent's information

Independent variable:	*(1)* *Full sample* *Liberty*	*(2)* *With Mother's information* *Liberty*	*(3)* *Augmented*	*(4)* *With Father's information* *Liberty*	*(5)* *Augmented*
Religious identity:					
Ref. Christian					
Muslim	-0.747***	-1.767***	-1.321***	-1.836***	-1.414***
	(0.00358)	(0.0153)	(0.0143)	(0.0227)	(0.0205)
Liberty	5.189***	4.921***	2.807***	4.676***	2.475***
	(0.00338)	(0.0133)	(0.0126)	(0.0189)	(0.0173)
Liberty x Religious identity:					
Liberty x Muslim	0.210***	1.295***	1.354***	1.351***	1.286***
	(0.00391)	(0.0155)	(0.0144)	(0.0228)	(0.0206)
Mother's YOS	No	No	0.585***	No	No
			(0.000599)		
Father's YOS	No	No	No	No	0.540***
					(0.000651)
Female	-0.948***	3.021***	-0.147***	0.242***	0.0449***
	(0.00176)	(0.0170)	(0.00505)	(0.00721)	(0.00611)
Province of birth FE	Yes	Yes	Yes	Yes	Yes
Constant	1.568***	4.289***	3.336***	3.411***	3.262***
	(0.00438)	(0.0723)	(0.0154)	(0.0235)	(0.0207)
N	1840289	223554	223554	147073	147073
adj. R-square	0.237	0.247	0.375	0.131	0.371

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, Year of Liberty cubic, mother's YOS (column 3), and father's YOS (column 5)

Table A6.2: Policy Model: Comparison of estimation results for the full sample and sub-sample with parent's information

Independent variable:	*(1)* *Full sample*	*(2)* *With Mother's information*	*(3)*	*(4)* *With Father's information*	*(5)*
	Policy	*Policy*	*Augmented*	*Policy*	*Augmented*
Religious identity:					
Ref. Christian					
Muslim	-1.011***	-4.025***	-3.501***	-0.929***	-0.366***
	(0.00657)	(0.0771)	(0.0782)	(0.0559)	(0.0277)
Liberty	0.845***	-0.145***	-0.416***	-0.100*	-0.182***
	(0.0148)	(0.0450)	(0.0414)	(0.0547)	(0.0533)
Liberty x Religious identity:					
Liberty x Muslim	-0.352***	0.717***	1.052***	0.109	-0.182***
	(0.0172)	(0.0545)	(0.0509)	(0.0696)	(0.0667)
Mother's YOS	No	No	0.537***	No	No
			(0.000618)		
Father's YOS	No	No	No	No	0.499***
					(0.000662)
Policy Cohort	Yes	Yes	Yes	Yes	Yes
Religious Identity x Policy:					
Muslim x Expansion of subsidized village schools	0.391***	2.470***	2.354***	-0.100	-0.384***
(1920-1930)	(0.00791)	(0.0809)	(0.0816)	(0.0786)	(0.0587)
Muslim x Reduction of support for village schools	0.251***	1.567***	1.453***	-1.236***	-1.414***
(1931-1936)	(0.00855)	(0.0804)	(0.0811)	(0.0650)	(0.0404)
Muslim x Repair & reconstruction policy (1937-	-0.138***	1.889***	2.042***	-1.207***	-1.294***
1941)	(0.0100)	(0.0819)	(0.0823)	(0.0674)	(0.0450)
Muslim x Japan occupation	0.186***	2.977***	2.742***	-0.129*	-0.401***
(1942-1945)	(0.0119)	(0.0826)	(0.0832)	(0.0692)	(0.0463)
Muslim x Republican war	-0.0779***	0.562***	0.396***	-2.016***	-1.477***
(1946-1949)	(0.0205)	(0.102)	(0.0988)	(0.0970)	(0.0789)
Muslim x Exclusion of	0.440***	2.166***	1.897***	-0.152	-0.0545
Madrassah (1950-1966)	(0.0188)	(0.0967)	(0.0952)	(0.0960)	(0.0788)
Muslim x Nationalisation of private madrassah (1967-	0.871***	2.842***	2.562***	0.346***	0.511***
1974)	(0.0189)	(0.0957)	(0.0943)	(0.0916)	(0.0745)
Muslim x Curriculum	1.053***	2.961***	2.569***	0.408***	0.477***
alignment (1975-1978)	(0.0193)	(0.0958)	(0.0944)	(0.0914)	(0.0741)
Muslim x Partial nationalisation of (former) Christian Mission schools	1.140***	3.032***	2.586***	0.524***	0.550***
(1979-1985)	(0.0188)	(0.0947)	(0.0935)	(0.0896)	(0.0725)
Female	-0.923***	0.138***	-0.0768***	0.293***	0.0960***
	(0.00167)	(0.00555)	(0.00492)	(0.00687)	(0.00595)
Province of birth FE	Yes	Yes	Yes	Yes	Yes
Constant	1.091***	7.337***	4.455***	0.0896*	0.408***
	(0.00658)	(0.0817)	(0.0729)	(0.0457)	(0.0235)
N	1840289	223554	223554	147073	147073
adj. R-square	0.312	0.249	0.402	0.207	0.402

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, Year of Liberty cubic, mother's YOS (column 3), and father's YOS (column 5)

Appendix A7. Re-estimation of Liberty Dividend in Years of Schooling for Christian vs. Muslim for Subsample with Mother's information

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity:					
Ref. Christian					
Muslim	-1.767***	-4.025***	-3.818***	-3.859***	-4.281***
	(0.0153)	(0.0771)	(0.0776)	(0.0779)	(0.0791)
Liberty	4.921***	-0.145***	-0.358***	-0.340***	-0.373***
	(0.0133)	(0.0450)	(0.0451)	(0.0452)	(0.0452)
Liberty x Religious identity:					
Liberty x Muslim	1.295***	0.717***	0.749***	0.746***	0.748***
	(0.0155)	(0.0545)	(0.0545)	(0.0545)	(0.0545)
Mother's YOS	No	No	No	No	No
Policy Cohort:					
Ref. Establishment of self financed village schools (1906-1919)		-2.498***	-3.557***	-3.381***	-2.144***
Expansion of subsidized village schools (1920-1930)		(0.0745)	(0.0760)	(0.0813)	(0.0821)
		-1.194***	-3.095***	-2.806***	-1.122***
Reduction of support for village schools (1931-1936)		(0.0744)	(0.0783)	(0.0919)	(0.0910)
		-0.516***	-3.007***	-2.654***	-0.892***
Repair & reconstruction policy (1937-1941)		(0.0757)	(0.0820)	(0.100)	(0.0968)
		-0.612***	-3.448***	-3.063***	-1.324***
Japan occupation (1942-1945)		(0.0754)	(0.0834)	(0.105)	(0.0995)
		0.862***	-2.107***	-1.712***	-0.00362
Republican war (1946-1949)		(0.0915)	(0.0987)	(0.118)	(0.113)

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
		2.992***	-1.476***	-1.011***	0.192
Exclusion of Madrassahs (1950-1966)		(0.0863)	(0.102)	(0.127)	(0.119)
		4.044***	-1.466***	-0.995***	-0.101
Nationalisation of private madrassahs (1967-1974)		(0.0855)	(0.109)	(0.132)	(0.125)
		4.152***	-1.925***	-1.467***	-0.635***
Curriculum alignment (1975-1978)		(0.0857)	(0.114)	(0.134)	(0.127)
		4.500***	-2.172***	-1.740***	-0.821***
Partial nationalisation of (former) Christian Mission schools (1979-1985)		(0.0848)	(0.118)	(0.135)	(0.128)
Religious Identity x Policy cohort:					
Muslim x Expansion of subsidized village schools (1920-1930)		2.470***	2.288***	2.325***	2.721***
		(0.0809)	(0.0814)	(0.0817)	(0.0827)
Muslim x Reduction of support for village schools (1931-1936)		1.567***	1.338***	1.382***	1.805***
		(0.0804)	(0.0807)	(0.0810)	(0.0821)
Muslim x Repair & reconstruction policy (1937-1941)		1.889***	1.626***	1.672***	2.093***
		(0.0819)	(0.0823)	(0.0829)	(0.0838)
Muslim x Japan occupation (1942-1945)		2.977***	2.737***	2.781***	3.198***
		(0.0826)	(0.0830)	(0.0835)	(0.0845)
Muslim x Republican war (1946-1949)		0.562***	0.343***	0.385***	0.808***
		(0.102)	(0.102)	(0.102)	(0.103)
Muslim x Exclusion of Madrassah (1950-1966)		2.166***	1.939***	1.983***	2.405***

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
		(0.0967)	(0.0970)	(0.0973)	(0.0983)
Muslim x Nationalisation of private madrassah (1967-1974)		2.842***	2.604***	2.648***	3.065***
		(0.0957)	(0.0960)	(0.0964)	(0.0972)
Muslim x Curriculum alignment (1975-1978)		2.961***	2.725***	2.769***	3.188***
		(0.0958)	(0.0962)	(0.0965)	(0.0974)
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		3.032***	2.782***	2.825***	3.247***
		(0.0947)	(0.0951)	(0.0954)	(0.0963)
Female	0.100***	0.138***	0.129***	0.129***	0.126***
	(0.00585)	(0.00555)	(0.00555)	(0.00555)	(0.00554)
Province of birth FE:					
Ref. West Nusa Tenggara					
East Nusa Tenggara	-0.530***	-0.715***	-0.707***	-0.707***	-0.713***
	(0.0152)	(0.0145)	(0.0145)	(0.0145)	(0.0145)
West Kalimantan	0.153***	-0.140***	-0.145***	-0.144***	-0.143***
	(0.0136)	(0.0129)	(0.0128)	(0.0128)	(0.0128)
Central Kalimantan	1.183***	0.821***	0.818***	0.819***	0.816***
	(0.0182)	(0.0173)	(0.0173)	(0.0173)	(0.0173)
South Kalimantan	0.578***	0.632***	0.635***	0.636***	0.634***
	(0.0137)	(0.0126)	(0.0125)	(0.0125)	(0.0125)
East Kalimantan	2.461***	1.909***	1.906***	1.906***	1.901***
	(0.0152)	(0.0146)	(0.0145)	(0.0145)	(0.0145)
North Sulawesi	1.107***	0.907***	0.920***	0.920***	0.916***
	(0.0148)	(0.0141)	(0.0140)	(0.0140)	(0.0140)
Central Sulawesi	1.194***	0.991***	0.993***	0.994***	0.991***
	(0.0156)	(0.0149)	(0.0149)	(0.0149)	(0.0149)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
South Sulawesi	0.537*** (0.0112)	0.493*** (0.0104)	0.507*** (0.0103)	0.507*** (0.0103)	0.504*** (0.0103)
Southeast Sulawesi	1.088*** (0.0170)	0.892*** (0.0158)	0.894*** (0.0158)	0.894*** (0.0158)	0.899*** (0.0158)
Maluku	1.780*** (0.0149)	1.534*** (0.0143)	1.534*** (0.0143)	1.534*** (0.0143)	1.534*** (0.0143)
Year of Liberty			0.103*** (0.00126)	0.0945*** (0.00178)	0.115*** (0.00211)
Year of Liberty square				0.000182*** (0.0000319)	0.00164*** (0.0000410)
Year of Liberty cubic					-0.0000377*** (0.00000109)
Constant	3.021*** (0.0170)	4.289*** (0.0723)	7.337*** (0.0817)	6.934*** (0.105)	5.233*** (0.0989)
N	223554	223554	223554	223554	223554
adj. R-square	0.177	0.247	0.249	0.249	0.250

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Appendix A8. Augmented using Mother's YOS: Liberty Dividend in Years of Schooling for Christian vs. Muslim for Subsample with Mother's information

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity:					
Ref. Christian					
Muslim	-1.321***	-3.501***	-3.396***	-3.361***	-3.720***
	(0.0143)	(0.0782)	(0.0783)	(0.0789)	(0.0801)
Liberty	2.807***	-0.416***	-0.525***	-0.540***	-0.567***
	(0.0126)	(0.0414)	(0.0414)	(0.0415)	(0.0416)
Liberty x Religious identity:					
Liberty x Muslim	1.354***	1.052***	1.068***	1.070***	1.072***
	(0.0144)	(0.0509)	(0.0509)	(0.0509)	(0.0510)
Mother's YOS	0.585***	0.537***	0.535***	0.535***	0.535***
	(0.000599)	(0.000618)	(0.000619)	(0.000619)	(0.000619)
Policy Cohort:					
Ref. Establishment of self financed village schools (1906-1919)		-2.278***	-2.823***	-2.970***	-1.918***
Expansion of subsidized village schools (1920-1930)		(0.0749)	(0.0760)	(0.0806)	(0.0815)
		-1.069***	-2.046***	-2.288***	-0.856***
Reduction of support for village schools (1931-1936)		(0.0749)	(0.0779)	(0.0898)	(0.0897)
		-0.630***	-1.909***	-2.205***	-0.707***
Repair & reconstruction policy (1937-1941)		(0.0757)	(0.0807)	(0.0971)	(0.0951)
		-0.571***	-2.028***	-2.350***	-0.873***
Japan occupation (1942-1945)		(0.0758)	(0.0822)	(0.101)	(0.0980)
		0.812***	-0.713***	-1.044***	0.409***
Republican war (1946-1949)		(0.0886)	(0.0945)	(0.112)	(0.109)
		2.146***	-0.146	-0.535***	0.488***

Exclusion of Madrassahs (1950-1966)	(0.0848)	(0.0981)	(0.121)	(0.115)
	2.652***	-0.174*	-0.569***	0.191
Nationalisation of private madrassahs (1967-1974)	(0.0841)	(0.104)	(0.126)	(0.120)
	2.470***	-0.646***	-1.030***	-0.323***
Curriculum alignment (1975-1978)	(0.0842)	(0.108)	(0.128)	(0.122)
	2.516***	-0.904***	-1.266***	-0.484***
Partial nationalisation of (former) Christian Mission schools (1979-1985)	(0.0835)	(0.111)	(0.128)	(0.122)
Religious Identity x Policy cohort:				
Muslim x Expansion of subsidized village schools (1920-1930)	2.354***	2.261***	2.230***	2.567***
	(0.0816)	(0.0818)	(0.0823)	(0.0835)
Muslim x Reduction of support for village schools (1931-1936)	1.453***	1.336***	1.300***	1.660***
	(0.0811)	(0.0812)	(0.0818)	(0.0830)
Muslim x Repair & reconstruction policy (1937-1941)	2.042***	1.906***	1.867***	2.225***
	(0.0823)	(0.0825)	(0.0832)	(0.0844)
Muslim x Japan occupation (1942-1945)	2.742***	2.619***	2.582***	2.937***
	(0.0832)	(0.0833)	(0.0839)	(0.0850)
Muslim x Republican war (1946-1949)	0.396***	0.284***	0.248**	0.608***
	(0.0988)	(0.0989)	(0.0994)	(0.100)
Muslim x Exclusion of Madrassah (1950-1966)	1.897***	1.781***	1.745***	2.104***
	(0.0952)	(0.0953)	(0.0958)	(0.0969)

Muslim x Nationalisation of private madrassah (1967-1974)		2.562***	2.440***	2.403***	2.759***
		(0.0943)	(0.0944)	(0.0949)	(0.0960)
Muslim x Curriculum alignment (1975-1978)		2.569***	2.449***	2.412***	2.768***
		(0.0944)	(0.0945)	(0.0950)	(0.0960)
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		2.586***	2.459***	2.422***	2.781***
1.amuslim#10.edupolicy		(0.0935)	(0.0936)	(0.0941)	(0.0952)
Female	-0.147***	-0.0768***	-0.0810***	-0.0811***	-0.0832***
	(0.00505)	(0.00492)	(0.00492)	(0.00492)	(0.00492)
Province of birth FE:					
Ref. West Nusa Tenggara					
East Nusa Tenggara	-0.647***	-0.772***	-0.768***	-0.768***	-0.773***
	(0.0133)	(0.0130)	(0.0130)	(0.0130)	(0.0130)
West Kalimantan	-0.0536***	-0.222***	-0.224***	-0.225***	-0.225***
	(0.0119)	(0.0115)	(0.0115)	(0.0115)	(0.0115)
Central Kalimantan	-0.103***	-0.219***	-0.217***	-0.218***	-0.220***
	(0.0159)	(0.0155)	(0.0154)	(0.0154)	(0.0154)
South Kalimantan	-0.295***	-0.201***	-0.197***	-0.197***	-0.198***
	(0.0119)	(0.0113)	(0.0113)	(0.0113)	(0.0113)
East Kalimantan	0.846***	0.661***	0.663***	0.663***	0.659***
	(0.0135)	(0.0131)	(0.0131)	(0.0131)	(0.0131)
North Sulawesi	-0.494***	-0.528***	-0.517***	-0.517***	-0.520***
	(0.0130)	(0.0127)	(0.0127)	(0.0127)	(0.0127)
Central Sulawesi	-0.103***	-0.121***	-0.116***	-0.116***	-0.118***
	(0.0140)	(0.0137)	(0.0137)	(0.0137)	(0.0137)
South Sulawesi	-0.132***	-0.140***	-0.131***	-0.131***	-0.134***
	(0.00991)	(0.00943)	(0.00942)	(0.00942)	(0.00942)
Southeast Sulawesi	0.319***	0.259***	0.262***	0.262***	0.266***
	(0.0149)	(0.0144)	(0.0143)	(0.0143)	(0.0143)

Maluku	0.252***	0.225***	0.229***	0.228***	0.228***
	(0.0134)	(0.0131)	(0.0131)	(0.0131)	(0.0131)
Year of Liberty			0.0527***	0.0595***	0.0766***
			(0.00113)	(0.00167)	(0.00195)
Year of Liberty square				-0.000153***	0.00109***
				(0.0000292)	(0.0000393)
Year of Liberty cubic				-0.0000320***	
				(0.000000996)	
Constant	3.336***	4.455***	6.020***	6.358***	4.912***
	(0.0154)	(0.0729)	(0.0804)	(0.102)	(0.0974)
N	223554	223554	223554	223554	223554
adj. R-square	0.375	0.402	0.402	0.402	0.403

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, Year of Liberty cubic, and mother's YOS.

Appendix A9. Re-estimation of Liberty Dividend in Years of Schooling for Christian vs. Muslim for Subsample with Father's information

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity:					
Ref. Christian					
Muslim	-1.836***	-0.929***	-0.379***	-0.254***	-2.182***
	(0.0227)	(0.0559)	(0.0515)	(0.0637)	(0.0974)
Liberty	4.676***	-0.100*	-0.267***	-0.286***	-0.315***
	(0.0189)	(0.0547)	(0.0548)	(0.0550)	(0.0551)
Liberty x Religious identity:					
Liberty x Muslim	1.351***	0.109	0.120*	0.121*	0.122*
	(0.0228)	(0.0696)	(0.0696)	(0.0696)	(0.0695)
Father's YOS	No	No	No	No	No
Policy Cohort:					
Ref. Establishment of self financed village schools (1906-1919)		1.949***	1.205***	1.056***	2.759***
Expansion of subsidized village schools (1920-1930)		(0.0642)	(0.0627)	(0.0782)	(0.0952)
		2.801***	1.279***	0.997***	3.648***
Reduction of support for village schools (1931-1936)		(0.0522)	(0.0540)	(0.0980)	(0.114)
		3.804***	1.747***	1.389***	4.254***
Repair & reconstruction policy (1937-1941)		(0.0544)	(0.0620)	(0.120)	(0.130)
		4.453***	2.081***	1.685***	4.551***
Japan occupation (1942-1945)		(0.0530)	(0.0650)	(0.132)	(0.137)
		5.118***	2.647***	2.240***	5.076***
Republican war (1946-1949)		(0.0781)	(0.0876)	(0.147)	(0.150)
		7.132***	3.228***	2.716***	4.691***
Exclusion of Madrassahs (1950-1966)		(0.0750)	(0.102)	(0.179)	(0.172)
		8.339***	3.528***	2.990***	4.395***
Nationalisation of private madrassahs (1967-1974)		(0.0720)	(0.114)	(0.192)	(0.184)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Curriculum alignment (1975-1978)		8.497***	3.183***	2.646***	3.870***
		(0.0719)	(0.121)	(0.196)	(0.188)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		8.806***	2.950***	2.427***	3.678***
		(0.0703)	(0.129)	(0.197)	(0.190)
Religious Identity x Policy cohort:					
Muslim x Expansion of subsidized village schools (1920-1930)		-0.100	-0.571***	-0.680***	1.082***
		(0.0786)	(0.0765)	(0.0817)	(0.105)
Muslim x Reduction of support for village schools (1931-1936)		-1.236***	-1.772***	-1.894***	0.0119
		(0.0650)	(0.0608)	(0.0703)	(0.101)
Muslim x Repair & reconstruction policy (1937-1941)		-1.207***	-1.798***	-1.928***	0.00185
		(0.0674)	(0.0639)	(0.0753)	(0.105)
Muslim x Japan occupation (1942-1945)		-0.129*	-0.690***	-0.816***	1.108***
		(0.0692)	(0.0657)	(0.0755)	(0.105)
Muslim x Republican war (1946-1949)		-2.016***	-2.573***	-2.699***	-0.773***
		(0.0970)	(0.0945)	(0.102)	(0.126)
Muslim x Exclusion of Madrassah (1950-1966)		-0.152	-0.735***	-0.863***	1.047***
		(0.0960)	(0.0934)	(0.101)	(0.125)
Muslim x Nationalisation of private madrassah (1967-1974)		0.346***	-0.223**	-0.350***	1.572***
		(0.0916)	(0.0890)	(0.0965)	(0.121)
Muslim x Curriculum alignment (1975-1978)		0.408***	-0.153*	-0.279***	1.646***
		(0.0914)	(0.0887)	(0.0963)	(0.121)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.524***	-0.0515	-0.177*	1.751***
1.amuslim#10.edupolicy		(0.0896)	(0.0869)	(0.0945)	(0.120)
Female	0.242***	0.293***	0.291***	0.291***	0.287***
	(0.00721)	(0.00687)	(0.00687)	(0.00687)	(0.00687)
Province of birth FE:					
Ref. West Nusa Tenggara					
East Nusa Tenggara	-0.468***	-0.769***	-0.762***	-0.762***	-0.770***
	(0.0192)	(0.0181)	(0.0181)	(0.0181)	(0.0181)
West Kalimantan	-0.0380**	-0.353***	-0.357***	-0.358***	-0.362***
	(0.0171)	(0.0158)	(0.0158)	(0.0158)	(0.0158)
Central Kalimantan	1.222***	0.767***	0.762***	0.762***	0.756***
	(0.0224)	(0.0214)	(0.0214)	(0.0214)	(0.0214)
South Kalimantan	0.994***	0.753***	0.750***	0.750***	0.747***
	(0.0184)	(0.0170)	(0.0170)	(0.0170)	(0.0170)
East Kalimantan	2.430***	1.786***	1.785***	1.785***	1.778***
	(0.0188)	(0.0177)	(0.0177)	(0.0177)	(0.0177)
North Sulawesi	1.036***	0.678***	0.683***	0.682***	0.678***
	(0.0185)	(0.0174)	(0.0173)	(0.0173)	(0.0173)
Central Sulawesi	0.979***	0.767***	0.771***	0.771***	0.766***
	(0.0196)	(0.0184)	(0.0184)	(0.0184)	(0.0184)
South Sulawesi	0.623***	0.396***	0.408***	0.408***	0.404***
	(0.0145)	(0.0131)	(0.0131)	(0.0131)	(0.0131)
Southeast Sulawesi	1.655***	1.155***	1.155***	1.156***	1.152***
	(0.0229)	(0.0215)	(0.0215)	(0.0215)	(0.0215)
Maluku	1.578***	1.269***	1.278***	1.278***	1.269***
	(0.0187)	(0.0175)	(0.0174)	(0.0174)	(0.0174)
Year of Liberty			0.0930***	0.103***	0.127***
			(0.00176)	(0.00343)	(0.00372)
Year of Liberty square				-0.000182***	0.00271***

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
				(0.0000544)	(0.0000897)
Year of Liberty cubic					-0.0000629*** (0.00000201)
Constant	3.411*** (0.0235)	0.0896* (0.0457)	2.624*** (0.0613)	3.040*** (0.135)	0.212 (0.138)
N	147073	147073	147073	147073	147073
adj. R-square	0.131	0.207	0.209	0.209	0.209

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, and Year of Liberty cubic.

Appendix A10. Augmented using Father's YOS: Liberty Dividend in Years of Schooling for Christian vs. Muslim for Subsample with Father's information

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Religious identity:					
Ref. Christian					
Muslim	-1.414***	-0.366***	-0.0488*	-0.180***	-1.548***
	(0.0205)	(0.0277)	(0.0264)	(0.0442)	(0.0730)
Liberty	2.475***	-0.182***	-0.278***	-0.258***	-0.279***
	(0.0173)	(0.0533)	(0.0534)	(0.0536)	(0.0536)
Liberty x Religious identity:					
Liberty x Muslim	1.286***	-0.182***	-0.176***	-0.177***	-0.176***
	(0.0206)	(0.0667)	(0.0667)	(0.0667)	(0.0667)
Father's YOS	0.540***	0.499***	0.498***	0.498***	0.498***
	(0.000651)	(0.000662)	(0.000663)	(0.000663)	(0.000663)
Policy Cohort:					
Ref. Establishment of self financed village schools (1906-1919)		1.576***	1.146***	1.302***	2.511***
Expansion of subsidized village schools (1920-1930)		(0.0470)	(0.0485)	(0.0678)	(0.0835)
		2.469***	1.588***	1.884***	3.765***
Reduction of support for village schools (1931-1936)		(0.0324)	(0.0389)	(0.0856)	(0.101)
		3.239***	2.050***	2.425***	4.457***
Repair & reconstruction policy (1937-1941)		(0.0365)	(0.0482)	(0.108)	(0.118)
		3.695***	2.323***	2.740***	4.773***
Japan occupation (1942-1945)		(0.0341)	(0.0507)	(0.119)	(0.126)
		4.033***	2.604***	3.032***	5.044***
Republican war (1946-1949)		(0.0638)	(0.0748)	(0.134)	(0.139)
		5.427***	3.171***	3.708***	5.109***
Exclusion of Madrassahs (1950-1966)		(0.0621)	(0.0886)	(0.165)	(0.159)
		6.011***	3.230***	3.795***	4.791***

Independent variable:	*(1) Liberty*	*(2) Policy*	*(3) Robust 1*	*(4) Robust 2*	*(5) Robust 3*
Nationalisation of private madrassahs (1967-1974)		5.927***	2.855***	3.418***	4.286***
		(0.0590)	(0.0985)	(0.176)	(0.169)
Curriculum alignment (1975-1978)		6.053***	2.668***	3.216***	4.103***
		(0.0588)	(0.105)	(0.180)	(0.173)
Partial nationalisation of (former) Christian Mission schools (1979-1985)		-0.384***	-0.656***	-0.542***	0.708***
		(0.0575)	(0.112)	(0.181)	(0.174)
Religious Identity x Policy cohort: Muslim x Expansion of subsidized village schools (1920-1930)		-1.414***	-1.724***	-1.596***	-0.243***
		(0.0587)	(0.0587)	(0.0630)	(0.0785)
Muslim x Reduction of support for village schools (1931-1936)		-1.294***	-1.637***	-1.500***	-0.131
		(0.0404)	(0.0393)	(0.0523)	(0.0780)
Muslim x Repair & reconstruction policy (1937-1941)		-0.401***	-0.725***	-0.593***	0.772***
		(0.0450)	(0.0445)	(0.0583)	(0.0821)
Muslim x Japan occupation (1942-1945)		-1.477***	-1.801***	-1.669***	-0.303***
		(0.0463)	(0.0456)	(0.0578)	(0.0819)
Muslim x Republican war (1946-1949)		-0.0545	-0.392***	-0.259***	1.096***
		(0.0789)	(0.0784)	(0.0861)	(0.104)
Muslim x Exclusion of Madrassah (1950-1966)		0.511***	0.181**	0.313***	1.676***
		(0.0788)	(0.0784)	(0.0861)	(0.104)
Muslim x Nationalisation of private madrassah (1967-1974)		0.477***	0.152**	0.285***	1.651***
		(0.0745)	(0.0741)	(0.0822)	(0.100)
Muslim x Curriculum alignment (1975-1978)					
		(0.0741)	(0.0737)	(0.0818)	(0.100)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Muslim x Partial nationalisation of (former) Christian Mission schools (1979-1985)		0.550***	0.217***	0.348***	1.717***
		(0.0725)	(0.0721)	(0.0803)	(0.0991)
Female	0.0449***	0.0960***	0.0953***	0.0956***	0.0931***
	(0.00611)	(0.00595)	(0.00595)	(0.00595)	(0.00595)
Province of birth FE:					
Ref. West Nusa Tenggara					
East Nusa Tenggara	-0.504***	-0.707***	-0.703***	-0.703***	-0.709***
	(0.0164)	(0.0158)	(0.0158)	(0.0158)	(0.0158)
West Kalimantan	-0.148***	-0.337***	-0.339***	-0.338***	-0.341***
	(0.0145)	(0.0137)	(0.0137)	(0.0137)	(0.0137)
Central Kalimantan	0.0787***	-0.117***	-0.119***	-0.119***	-0.122***
	(0.0192)	(0.0187)	(0.0187)	(0.0187)	(0.0187)
South Kalimantan	-0.0107	-0.0880***	-0.0879***	-0.0877***	-0.0893***
	(0.0155)	(0.0147)	(0.0147)	(0.0147)	(0.0147)
East Kalimantan	0.829***	0.550***	0.551***	0.551***	0.547***
	(0.0160)	(0.0155)	(0.0154)	(0.0154)	(0.0154)
North Sulawesi	-0.148***	-0.304***	-0.300***	-0.299***	-0.302***
	(0.0157)	(0.0151)	(0.0151)	(0.0151)	(0.0151)
Central Sulawesi	-0.120***	-0.166***	-0.162***	-0.162***	-0.165***
	(0.0167)	(0.0162)	(0.0162)	(0.0162)	(0.0162)
South Sulawesi	0.104***	-0.0166	-0.00881	-0.00851	-0.0113
	(0.0122)	(0.0115)	(0.0115)	(0.0115)	(0.0115)
Southeast Sulawesi	0.612***	0.376***	0.377***	0.377***	0.375***
	(0.0193)	(0.0187)	(0.0187)	(0.0187)	(0.0187)
Maluku	0.288***	0.191***	0.198***	0.197***	0.191***
	(0.0162)	(0.0156)	(0.0156)	(0.0156)	(0.0156)
Year of Liberty			0.0538***	0.0431***	0.0598***
			(0.00154)	(0.00317)	(0.00340)

Independent variable:	*(1)* *Liberty*	*(2)* *Policy*	*(3)* *Robust 1*	*(4)* *Robust 2*	*(5)* *Robust 3*
Year of Liberty square				0.000191***	0.00224***
				(0.0000495)	(0.0000859)
Year of Liberty cubic					-0.0000447***
					(0.00000184)
Constant	3.262***	0.408***	1.874***	1.438***	-0.568***
	(0.0207)	(0.0235)	(0.0464)	(0.122)	(0.127)
N	147073	147073	147073	147073	147073
adj. R-square	0.371	0.402	0.402	0.402	0.402

Source: author, based on data 1971 and 2010 Population Censuses from IPUMS-I (2018).
Notes: Standard errors are in parentheses. * p<.10, ** p<.05, *** p<.01. Individual covariates are sex and number of years of country liberty relative to year of birth (in short Year of Liberty), Year of Liberty square, Year of Liberty cubic, and Father's YOS.

Chapter 5. Conclusion

5.1. Key Findings and Contributions

There has been a trend of widening income inequality around the globe in the last 40 decades or so (Piketty, 2017; Acemoglu and Robinson, 2005). This trend has triggered a growing concern globally because, this undesirable trend is despite the global investment in democracy and secularism to foster equality of opportunity. One possible explanation could be due the constant dominance of traditional social institutions that by design are fostering identity politics and hence inequality of development opportunity and outcomes (Fukuyama, 2015; 2018). The traditional institutions do not disappear away but instead free-riding in the processes of during the democratization and secularization, capturing public resources for the benefit of certain traditional ruling class in the society (Dennis, 2003).

This thesis aims to understand if the stratification system in traditional social institution interplays with identity politics due to inter-class power contestation and as a result cause inequality of opportunity and human capital acquisition based on social class (Mohseni and Wilcox 2016; Fox, 2009). Specifically, this research explores the social classification under three traditional social institutions in Indonesia: the indigenous slavery in Sumba, caste system in Bali, and religion system in eastern Indonesia. The research examines their impact on inequality in human capital acquisition. Indonesia is the third largest democracy in the world with abundant development resources. Sadly, this democracy is plagued with high inequality in household-expenditure and horizontal conflicts. We expect that this research will contribute to the understanding of this nation's problem of inequality of opportunity and development outcomes and its causes.

In the first case study, for the case of indigenous slavery with a small inter-class power dynamic between the nobility and the commoner classes in Sumba Island, we found that the nobility class is the traditionally legitimate owners of land and slaves. As a result, the nobility controlled the land and labor which are essential for agriculture and hand-woven textile production. The slave class is the first source of labor supply because the nobility bears the fixed cost of essential amenities for their slaves, while the commoner class is the secondary

source of labor. Given the traditional position of leadership, the nobility class has been the first choice when it comes to recruitment for the leadership position in the modern government ever since the Netherlands Indies colonial government ruled indirectly in the Indonesian island of Sumba up to the end of the 19th century. However, there has been a few occasions of shift of leadership position in district and village level governments to the commoner class since the island came under the direct administration of the government of Indonesia.

When the nobility monopolizes the leadership positions in the modern government, this power is first and foremost good for the educational attainment of the nobility themselves and to a lesser extent good for the educational attainment of the direct subject, that is the slave class. However, as expected, the nobility's power share is bad for the educational attainment of their direct power competitor that is the commoner. Why does the slave class benefit more from the ruling regime of their master rather than from the ruling regime of the commoner class? The possible answer lies in the 'carrot and sticks' strategy used to maintain and make the slavery system profitable (Findlay, 1975; Lagerlof, 2009), and the lesser of two evils principle (for example Dell, 2010). The carrot part of the indigenous slavery system provides some opportunity for a certain percentage of slaves to be educated formally, and if they do not run away, this is good for the profitability of the slavery system due to an increase in human capital that leads to higher productivity. So, there is an incentive for the nobility to invest their resources in the education of their slaves, although the level of education provided by masters for their slaves is low.

Moreover, it seems that in Sumba's slavery system, the ruling nobility is the lesser of two evils compared to the ruling commoner. This is because the nobility and their slaves are in the production system and they complete each other, so the nobility prioritizes labor supply from his slaves rather than from the commoner's. This puts the slave and commoner in competition for the supply of labor to the nobility-controlled production system. Additionally, at the top of the power pyramid, the commoner competes head-to-head against the nobility. Therefore, the ruling commoner will only prefer to benefit his group and not the slave who competes against the commoner for the supply of labor, as well as not their noble master who competes head-to-head with the commoner for power.

Meanwhile, the relationship between the nobility's power share and the inter-class gaps in body height as the proxy for long-term nutritional status is not as straightforward as in the

case of inter-class gaps in education. One possible explanation for the small gaps in body height between the ruling nobility and the slave class is that the nobility could not easily control the nutritional intake of the slave class such that they cannot discriminate over what the slave can eat. The other possible explanation is that the nobility does not intend to deprive the slave of their nutritional intake. According to the model of Findlay (1975) and Lagerlof (2009), it is in the interest of the nobility that they have healthy slaves working in their fields so the slave-master will invest in the nutrition and health of their slave. A healthy slave could turn into a more productive kind of 'capital' and give rise to the profitability of the production system that disproportionately benefits the nobility class. In fact, in Sumba's slavery system it is the slave class that cooks for noble households, and the slave (cook) determines their food portions. In addition to that, usually, the nobility will leave half their portion to be eaten by their slaves. Moreover, it is considered the obligation of the nobility to feed their slaves well and take care of their basic health, which is part of the 'carrot' strategy in maintaining a productive slavery system.

Some similar features in the relationship between the nobility's power share and YOS and between the nobility's power share, educational attainment, and body height are that: (1) the slave class benefits from the ruling nobility (the nobility is the lesser of two evil), and (2) the commoner is deprived by the ruling nobility, and (3) the ruling commoner tends not to benefit the slave class (the worse of two evils).

There is the possibility that the low gap in body height could mask the real intention of the nobility to suppress the level of education of the slaves to keep them in the slavery-based production system that disproportionately benefits the nobility, at a cost to the broader development outcomes of the slave class—therefore intentionally prolonging the inequality of outcomes within the indigenous Sumba population. Unfortunately for the slave class, the alternative ruling group that is the commoner class is the worse of two evils. So, under the business as usual scenario, neither the ruling nobility nor the ruling commoner will support the human capital development of the slave class to the point that equality of opportunity is widely fostered.

Meanwhile in the second case study, the case of inter-caste reversal of power in Bali, our estimation results show that in 2002, or 37 years after the initiation of the reversal of power, there is still a 2-year inter-caste schooling gap among the labor force aged 25 to 52 years — this remaining inter-caste gap in education factors into gaps in household business income and consumption. However, there is no inter-caste gap in labor market wage once the difference in educational attainment is considered. The results regarding education and wages confirm the

findings of Hnatkovska, Lahiri and Paul (2012) that the majority of the impact is achieved by the trend toward the reduction in the inter-caste gap in educational attainment, and then through education to wages.

Apart from their remaining disadvantage in educational attainment, there is no indication of wage discrimination against the peasant caste. This would be reasonable. As of 2002, the peasant caste held 6 out of 9 regent and mayor positions in Bali. If anything, given their control over local government, it should be they who now have the power to discriminate against the high caste and not the other way around. It is important to note that the regression results do not indicate a reversal in discrimination against the high caste.

The overall result is in principle in line with Mueller' (2003) proposition that even in a non-democratic setting, the leader will separate the citizens into a supporter group versus opposition group and treat them differently. In a caste-based society, the leader can quickly identify which person belongs to which caste due to the publicly exposed caste marker in one's name. In order to maximize his income and safety, the leader will distribute more to his supporters (namely his caste compatriots) at the cost of the opposition group (the other caste). In the Bali context where cohesion within caste is stronger than the adhesion between castes, it is not surprising that a government leader from the high-caste group would distribute more resources to high-caste citizens, while a government leader with a peasant background would distribute more to peasant-caste citizens. Therefore, the inter-caste reversal of power is followed by an inter-caste reversal of distribution of public funding and projects, which helps the previously disadvantaged group to reduce the development gaps. In the case of Bali, the gap in labor market wages has disappeared.

The remaining advantages of the high caste concerning education, business income and consumption are likely due to the centuries of the accumulative process during which time the high caste has been the first mover in education and business investment. The gap in education will most likely continue to close because among the younger cohort there has been a strong convergence in years of schooling. As of 2016, 8 out of 9 regent positions are held by the low caste. With the low caste continuing to consolidate power in Bali, it is likely that the low caste will close the education gap soon.

In the third case study on the religious-based opportunity, country liberty, and human capital disparities in Eastern Indonesia, our estimation results confirm our hypotheses that the

colonial and post-colonial religious affiliations advantage Christian and Muslim their educational achievement, respectively. Specifically, we find that during colonial time Christian had 0.75 higher years of schooling than Muslim. However, Indonesia's independence turned the tables to the advantage of Muslim who scores 0.21 higher liberty dividends in years of schooling. This trading of places on religious group receiving primary benefits pushes for a path for convergence across religion, although equity in schooling attainment has not been fully achieved.

We further test for the channel of the Muslim's liberty dividend by augmenting the main estimation with ten major education policies from 1906 to 1985 and its interaction terms with the religion dummy. These policies are colonial government policies aimed at providing education for the masses as part of the Ethic Colonial Policy (*Ethische Politiek*) and post-colonial government policies aimed at controlling the content of curriculum and funding for both Islamic schools (*madrassah*) and former Dutch Christian mission schools (Permani, 2009; Decree of Minister of Religious Affairs & Minister of Internal Affairs No. 1/1979). Our estimation results confirm that without these set of post-colonial policies the Muslim's liberty dividend in educational attainment would have been 0.32 to 0.35 years lower than that of the Christian.

Because the Christian ruling group in the colonial time was the Protestant who often discriminated and restricted the Catholic movements in the colony, we further separate the Christian into Protestant and Catholic branches. Remarkably, we find that the Protestant scores the highest liberty dividend in education, followed by Muslim and Catholic in the second and third place, respectively. These results indicate that the previous affiliation with the colonial power provides the Protestant with significant human capital stock that helps boost their effort for educational investment in post-colonial time in East Indonesia.

On the case Muslim, despite being the national ruler in post-colonial time, Muslim in East Indonesia gains slightly lower educational achievement than Protestant. This situation indicates a relative lack of effort from the Muslim front compared to that of the Protestant in making use of the more pro-Muslim education and low school fee policies environment in the post-independence era.

Meanwhile, the Catholic who neither rule nationally during colonial and post-colonial times trails Muslim and Protestant. Although the Catholic church has been dubbed as

Indonesia's self-confident minority due to the superiority of quality education for elementary and middle schools among the nation elite (Steenbrink, 2007), this reputation has not materialized into an advantage in educational attainment for the Catholic masses especially for Catholic female in Catholic-majority region. This phenomenon is partly due to over-investment in costly Catholic schools in Catholic-minority regions to boost their reach and influence among the country elite, both Catholic and non-Catholic alike, but due to budget constraints, exhausts the school investment in places where they are the majority population.

Therefore, for overall East Indonesia, the story of advancement of educational attainment is the story of both powers holding to influence education policies and effort in educational investment. That is, in the case of Muslim outperforms average Christian and Muslim outperforms Catholic, the adherents of the ruler's religion are the primary beneficiaries. However, in the case of Protestant outperforms the national ruling Muslim group and both Muslim and local Christian minorities outperform their local majority counterparts, the effort can matter more than ruling power.

5.2. Concluding Remarks and Policy Implications

5.2.1. Concluding Remarks

The results from the three case studies support our hypothesis that the gap in power holding determines disparities in educational attainment. In the absence of exogenous political shock that induce the transfer of power between classes, the more rigid the traditional stratification system of the society, the higher the inter-class educational attainment disparities. However, in the presence of a power shift or reversal, the inter-class gap of educational attainment between the new ruling class and the former ruling class will reduce. In the case of the never ruling slave class of Sumba and Catholic of eastern Indonesia, the new ruling class may not be willing or able to share the benefit of its power and freedom with the never ruling class.

Another insight provided by the case study on religious-based opportunity is that effort for educational investment matter. In the case of the Catholic minority, both male and female and Protestant minority male outperforming their Muslim counterparts indicate that strategic investment in education can be a winning factor that compensates for the discriminative power.

Taken together, in the case of Bali caste and Sumba indigenous slavery when people of the same ethnicity subscribe to the same ancient religion and hence values for education, the direction of change due to inter-class power shift is easy to predict. However, in the case of inter-religion contestation in eastern Indonesia, there are differences of value for religion across the religious group as well as across various ethnicities even within the same religion. Therefore, the impact of power shifts to determining which religious groups or sub-groups benefit the most from it is not straightforward.

Lastly, it is important to note that from the case of Sumba, different elements of human capital might behave differently. The dynamics of inter-class gaps in educational attainment is not parallel to the dynamics in gaps in body height. The latter is less sensitive to power holding probably because body height, as a proxy for long term nutrition, is a more basic human capital than educational attainment. That is, an individual can still be functioning productively though with limited education, but without the proper nutrition, they may have died earlier and not be in our sample anymore. In the case of indigenous slavery, fulfillment of slave nutrition intake is among the basic requirements for the slaves to work devotedly in the masters controlled production system.

5.2.2. Policy Implication

For the indigenous slavery system in Sumba, the course of action is clear. The absence of slavery abolition act and action to grants personal freedom for the slave class has made the members of this class prisoner of their traditional institution. Unless personal freedom is guaranteed, they will not be able to participate freely to benefit from the increasing democratized and decentralized Indonesia, and hence, in this case, will never move up to the higher ladder of power and of human capital outcomes.

Meanwhile, for the Bali caste system, the reversal of power has been kept intact by the implementation of a popular voting system to elect top government leaders in the island. With the peasant caste massively outnumbers the high caste, under the caste-based politics there is little chance for the high caste to win an election for top government positions. However, cost-benefit wise, the relevance of this caste-based identity politics shall be reviewed because it can become a boomerang to the Balinese as a people group against the non-Balinese. The same survey we use to analyze the inter-case gaps in educational attainment shows that average Balinese has lower educational attainment than their average non-Balinese cohabitants. If this

gap persists, the inter-ethnic tension will probably increase in replacement of the ongoing inter-caste contestation; and both are economically and politically costly.

The religious discrimination in general and in the education sector, in particular, is on the increasing trend with the presence of religious leaning regulations that favor the significant majority of a district or province is on the rise in decentralized and democratized Indonesia (Buehler & Muhtada, 2016). In light of the results of our study, religious discrimination is not the right solution to fostering inter-religion equality of educational opportunity and human capital outcomes. In the case studies of Bali and Sumba where people subscribe to the similar ethnic-based ancient religion, there are little differences in value and preferences for education among the people. However, when it comes to inter-religion comparison, power does not seem to be the most critical factor that determine the dynamic of gaps in human capital because the people of different religion might have different ethnicity and hence values and preferences toward western-style education.

In light of the results mentioned above that one traditional social institutions foster more inequality of opportunity than others, the assertion of the UN-SDGs assertion that all culture in which traditional institution is rooted has equal potential to become enablers of sustainable development is likely to be overreaching. There is an urgent need to identify the system of social stratification and the presence of worldview that could foster inequality of opportunity from the different traditional culture before such assertion translates into effective policy.

5.3. Recommendation for Future Research

5.3.1. Tackling current limitation

The main limitation of the thesis is it uses a small representation of the elements of human capital. That is, it uses educational attainment and body height that can represent mixed aspects of quantity and quality of human capital but does not directly use the standard measure of the quality of human capital such as innate ability during childhood and test score for scientific subjects at a certain age. This strategy requires a panel survey, which is not available yet for the cases we examine.

The other limitation of the thesis is the absence of inter-generational and inter-temporal mobility indicators. When panel data that contains inter-generational human capital can be

produced, inter-caste disparity in social mobility can be computed to provide a comprehensive picture of the impact of social identity and power holding on change in human capital.

5.3.2. Expanding the Research to Other Culture

Another possible extension of the research is to expand its cover on other culture. There are other regions in Indonesia and around the world where inter-group contestation and conflict or where vertical inequality and poverty are extremely high. Identifying the institutional root of inequality, poverty, and conflict can benefit the economists as well as policymakers in designed effective interventions.

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