Africa: Moving the Boundaries
Proceedings of the 39th *African Studies Association of Australasia and the Pacific* (AFSAAP) Annual Conference, 5-7 December 2016, The University of Western Australia.
(June 2017) ISBN: 978-0- 9942689-2-1

Ethnic Favouritism in Primary Education: Evidence from Kenya

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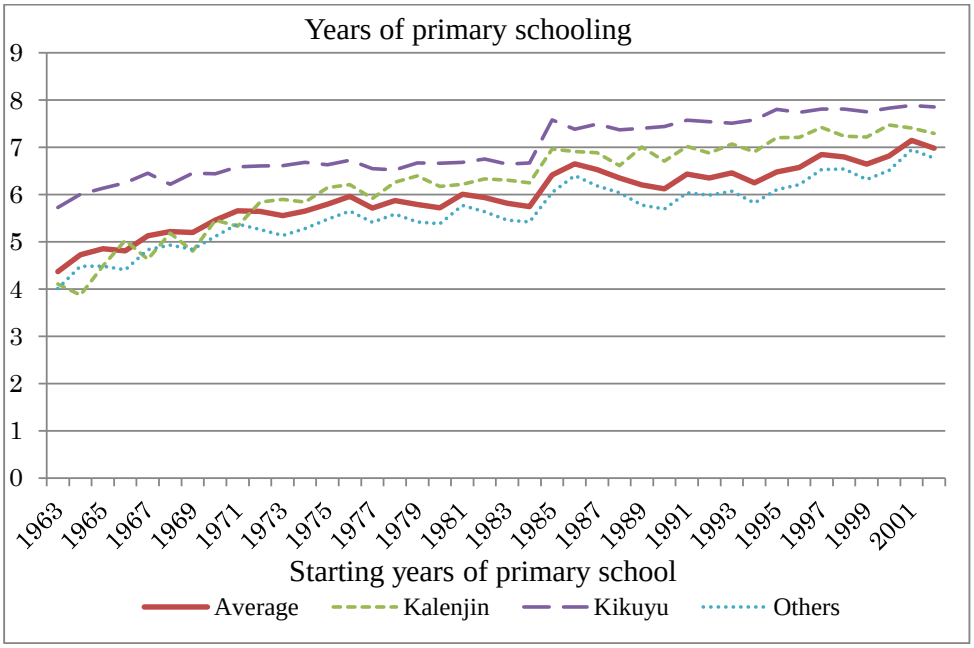
Abstract
Kenya has experienced widespread disparities in primary educational attainment across its different ethnic groups, whose geographical concentration retains the hallmarks of colonial administrative legacy. By investigating the co-ethnicity of Kenya's primary school children with the country's sitting presidents from 1963 through 2005, this study measures the effect of ethnic favouritism on educational attainment by drawing on data from the Kenya Demographic and Health Survey (KDHS) and the official population census. Results indicate that while ethnic favouritism occurs, the disparities in educational attainment are largely due to early exposure to education during the colonial era; moreover, co-ethnicity is not the sole defining factor of favouritism, which was found to operate at the district level (i.e., the greater the share of the co-ethnic population, the greater the favouritism and disadvantage of non-coethnics). Conversely, co-ethnics in non-dominant districts do not benefit from co-ethnicity with the president.

Introduction
Despite the fact that the 2013 Kenyan election witnessed a peaceful political transition, reminders of the ethnic conflict that raged in the aftermath of the preceding 2007 election remain, raising concerns that a salient consciousness of ethnicity may consistently undermine prospects for the country's economic and political development. The consciousness of ethnicity in Kenya was first created by the British colonial administration, who geographically divided its territory into districts according to what it assumed to be different ethnic groups. After independence, the post-colonial government further reinforced geographic divides by aligning parliamentary constituencies with former ethnic boundaries (Alwy and Schech 2004). Therefore, from the provincial to the district level, Kenyan regions are seen as ethnically homogenous within each district but heterogeneous across districts, as shown in Appendix 1.

During the colonial era, formal education in Kenya was first introduced by foreign missionaries and was racially segregated by the colonial government, resulting in severe neglect and lack of educational resources and facilities (e.g. physical schools) for African children when compared with their European-, Asian-, and Arab-descent counterparts (Eshiwani 1989). However, this division was not only between the races, as 'even among Africans, ethnic difference was manipulated to keep the various communities apart under the principle of 'divide and rule'' (Eshiwani 1989, p. 3). As a result, before Kenya's independence in 1963, significant disparities in primary education existed across different ethnic groups, as shown in Figure 1, which are mainly attributed to the geographic location of their respective homelands.

(June 2017) ISBN: 978-0- 9942689-2-1

Figure 1. Average Years of Primary Schooling by Ethnicity



Note: Author's calculations are based on date from the Kenya Demographic and Health Survey (KDHS) conducted in 1993, 1998, 2010, and 2014.

The first post-independence government made multiple attempts to address the problems facing the education system. In addition to the free education policy, the famous Ominde Commission, which was set up in 1964, 'recommended expansion of educational facilities for those districts and provinces that had been educationally disadvantaged in terms of numbers of schools and enrolments' (Alwy and Schech 2004, p. 270). The subsequent two governments also pledged to provide free primary education in order to realize the goal of universal primary education for their citizens. However, their efforts were not equally directed toward the various ethnic groups. According to Oucho (2002), the post-independence governments allocated resources in a way that allowed political leaders to favour their home regions or their own ethnic groups. Indeed, the literature shows that ethnic favouritism has been and remains prevalent in Kenya's primary education (e.g. Franck and Rainer 2012; Kramon and Posner 2016). This is also reflected in public opinion polls (Mwabu *et al* 2013) as well as voting behaviours (Bratton and Kimenyi 2008). Therefore, even though the consciousness of ethnicity was constructed by the colonial government, the nature of the disparities between ethnic groups changed from being one of geographical distinctiveness to being materially advantaged or disadvantaged due to ethnic group differences.

The time trend in Figure 1 shows that the politically dominant groups, namely the Kikuyu and the Kalenjin, have consistently outperformed other ethnic groups for the major part of the post-independence era. The Kikuyu had already asserted their position as good performers in primary education prior to independence, and have maintained it thereafter. This can be partly attributed to early exposure to education, as white settlers during the colonial era were predominantly located in their home territory, Central Province. This enabled the Kikuyu to profit the most from the disproportionate allocation

(June 2017) ISBN: 978-0- 9942689-2-1

of educational resources to the settlers (Alwy and Schech 2004). In addition, the educational success of the Kikuyu at the primary school level can be further ascribed to the group's Independent School Movement, which reflects their early recognition of education's importance (Stanfield 2005). Even though the Kalenjin people were extremely disadvantaged in terms of education at the time of independence, they began to outperform other ethnic groups from the 1970s onwards.

Thus, the question becomes whether the dominance of the Kikuyu and the Kalenjin people in education can be attributed to ethnic favouritism. This study will address this question using household data from the Kenya Demographic and Health Survey (KDHS) and the official population census. This paper is organized as follows. Section 2 reviews the literature on ethnic favouritism within the African context. Sections 3 and 4, respectively, explain empirical methodology and data sources. Section 5 presents empirical results, while Section 6 provides additional results from robustness checks before a conclusion is drawn in Section 7.

Literature Review

The concept of ethnic favouritism has been traditionally used to explain the poor economic performance of African countries, such that it is seen as a result of ethnic diversity (Easterly and Levine 1997; Montalvo and Reynal-Querol 2005). One reason why ethnic diversity may hinder economic development is its correlation with the under-provision of public goods, as previous studies have found (Alesina, Baqir, and Easterly 1999; Alesina *et al* 2003; La Porta *et al* 1999). Although it is widely accepted that there is a negative relationship between ethnic diversity and public goods provision (Habyarimana *et al* 2007), a recent study by Gisselquist (2013) found that ethnic heterogeneity does not necessarily lead to inadequate provision of public goods. The relationship between ethnic diversity and public goods provision varies according to the public goods themselves. Thus, it remains an open question what exactly that relationship is (Gisselquist 2013).

One of the main assumptions underpinning the negative association between ethnic diversity and public goods provision is that societies that are polarized due to ethnic diversity are prone to rent-seeking by different ethnic groups and have difficulty agreeing on public goods allocation (e.g. Easterly and Levine 1997; Alesina *et al* 1999). This assumption is implicitly based on another, namely that the various ethnic groups have different policy preferences. Even though the field experiment by Habyarimana *et al* (2007) found that there are no significant ethnic differences in terms of security, drainage maintenance, and garbage collection in Uganda, this does not rule out potential ethnic differences regarding preference toward other public goods in different contexts. A systematic analysis by Lieberman and McClendon (2012) confirmed a preference-based explanation for ethnic favouritism, such that co-ethnics have the same preference toward education.

Another line of studies on ethnic favouritism focuses on formal theories of ethnic politics (Franck and Rainer 2012) to explain why political coalitions are based on ethnicity. For example, in Fearon's (1999) model, ethnicity is used as an exclusion criterion to minimize the size of the winning coalition and to maximize the political "pork" the coalition might get. The reason why ethnicity serves as the criterion is that it cannot be

(June 2017) ISBN: 978-0- 9942689-2-1

chosen by an individual, unlike an individual's political affiliation (Fearon 1999). More recently, Miquel (2007) noted that his model is consistent with a public fund allocation bias under which, 'the government biases the allocation of resources by restricting access to bureaucratic posts, to the military or even to education to members of elected ethnic groups' (p. 1270), such as the Kikuyu and the Kalenjin in Kenya.

Discussions about the potential costs in economic welfare or political instability as well as the motivations of ethnic favouritism are still ongoing. An increasing number of studies have begun to empirically investigate the prevalence and magnitude of ethnic favouritism. To the best of the author's knowledge, Brockerhoff and Hewett (1998) provided the first cross-country study in Africa. They found that large disparities exist in child mortality among ethnic groups, a finding they attribute to the landscape of the political economy in countries such as Kenya. More recently, a study by Franck and Rainer (2012) systematically measured the existence and magnitude of ethnic favouritism in 18 African countries. Their results showed that there is a widespread effect of ethnic favouritism in both primary education and infant mortality. Similar results can also be found in Kramon and Posner (2016) and Burgess *et al* (2015), who, respectively, investigated ethnic favouritism in primary education and road construction in Kenya. By contrast, in Guinea, Kudamatsu (2009) found no evidence of the acting president having favoured his own ethnic group in the health sector. One possible explanation for these mixed results can be found in Kramon and Posner's (2013) study, which shows that the manifestation of ethnic favouritism varies markedly depending on the sectors one happens to study.

Most previous studies on ethnic favouritism have investigated its prevalence and magnitude without clearly defining it. Only Burgess *et al* (2015) explicitly defined the concept of ethnic favouritism as, 'a situation where coethnics benefit from patronage and public policy decisions, and thus receive a disproportionate share of public resources, when members of their coethnic group control the government' (p. 2). This current study follows this definition, although it provides indirect evidence of ethnic favouritism due to a lack of direct data on the distribution of public resources in Kenyan primary education. Another common drawback of previous studies is that they fail to clarify the specific level at which ethnic favouritism operates. There are two possible levels: (1) ethnic group, where only co-ethnics of the sitting president can benefit from ethnically favoured policies (e.g. ethnic-specific cash transfers or biased allocation of public sector jobs); (2) district level, where both co-ethnics of the sitting president and local minorities living in the districts where the dominant ethnic group shares ethnicity with the president benefit from it (e.g. building new schools or hiring more qualified teachers at the district level).

If ethnic favouritism operates at the ethnic group level, then co-ethnics of the sitting president can enjoy benefits no matter where they live. If ethnic favouritism operates at the district level, some co-ethnics of the president may not receive the benefits, while local minorities in the districts where the dominant ethnic group(s) share ethnicity with the president in power do. Another problem from previous studies is that, as mentioned in Section 1, inequality in socio-economic outcomes such as primary educational attainment already existed when Kenya gained independence in 1963 because of the education policies during the colonial era. Therefore, it is essential to isolate the initial conditions' effect across different ethnic groups in educational attainment when

(June 2017) ISBN: 978-0- 9942689-2-1

measuring the magnitude of ethnic favouritism.

Empirical Methodology

This study utilized the following empirical model to investigate the prevalence of ethnic favouritism in Kenyan primary education at the ethnic group level –

$$Yiet = \beta 0 + \beta 1 Ye0 + \beta 2 coethnic\ iet + \theta e + \delta t + Xi\ \beta + \varepsilon iet \quad (1)$$

Yiet measures the primary educational attainment of individuals i from ethnic group *e* who started primary school in year *t*. *Ye0* expresses the average of primary educational attainment for each ethnic group (e) in each province, using individuals who started primary education before independence as a measure of the initial condition. This can also capture the potential effect of education level and income of the parents on educational attainment, as indicated in other studies (Lloyd and Blanc 1996). Table 1 compares the key characteristics of individuals that were used to calculate the initial condition by ethnicity.

Table 1. Characteristics of Individuals by Ethnicity

Ethnicity	Birth Year	Female Dummy	Years of Primary Schooling	Primary Completion
Kalenjin	1950.79	0.57	3.48	0.28
Kamba	1950.76	0.62	4.19***	0.35***
Kikuyu	1950.61	0.60	5.10***	0.53***
Kisii	1950.86	0.58	3.89**	0.28
Luhya	1951.14	0.58	4.41***	0.40***
Luo	1951.01	0.59	3.85**	0.36***
Other	1951.10	0.60	3.29	0.33**

Note: Individuals who started primary school before independence are used for calculating the initial condition and the sample means are shown in the table. Kalenjin is used as the base group of t-test. *, **, and *** denote significance at the 10 per cent level, 5 per cent level, and 1 per cent level of the t-test, respectively.

Two approaches are used to define the main variable of interest, namely co-ethnic. The first approach assumes that ethnic favouritism has an immediate effect on education, which continues if an individual started primary school during the period in which his/her co-ethnics were in power. Under this premise, co-ethnic is defined as a binary variable, taking the value of one if the individual started primary school during the period in which the Kenyan president was his/her co-ethnic, and zero otherwise. Franck and Rainer's (2012) second approach views the variable of co-ethnic as a continuous variable that expresses a share of years in primary schooling corresponding to a co-ethnic president when individuals were between the ages of 6 and 13 (or 14 after 1985), assuming that ethnic favouritism only has a contemporary effect. While θe denotes the ethnicity fixed effect to capture ethnically specific factors (e.g. culture) that may influence education attainment, δt is a dummy variable for each starting year of primary school in order to control for time-fixed effects. *Xi* represents a vector of individual characteristics including religion and gender.

The former regression model investigates ethnic favouritism operating at the ethnic group level and tests whether ethnicity alone can determine if an individual benefits from ethnic favouritism. However, public education is usually provided by administrative

(June 2017) ISBN: 978-0- 9942689-2-1

Table 2. Characteristics of Individuals by District

District	Birth Year	Female Dummy	Years of Primary Schooling	Primary Completion
Nairobi	1939.97	0.36	4.44	0.53
Kirinyag	1939.50	0.52	1.67	0.18
Kiambu	1940.33	0.45	3.95	0.44
Nyandaur	1940.00	0.44	3.71	0.38
Nyeri	1940.70	0.47	3.69	0.41
Muranga	1939.65	0.58	3.08	0.31
Mombasa	1940.22	0.38	3.04	0.36
Kwale	1939.26	0.54	0.82	0.09
Kilifi	1939.04	0.51	1.34	0.14
Tana River	1939.08	0.53	0.42	0.04
Lamu	1938.78	0.52	0.91	0.11
Taita Taveta	1938.67	0.47	1.38	0.13
Marsabit	1939.74	0.47	0.56	0.06
Isiolo	1939.10	0.46	1.07	0.12
Embu	1940.30	0.48	2.93	0.31
Machakos	1939.35	0.50	2.52	0.23
Kitui	1938.73	0.55	1.45	0.14
Meru	1940.13	0.51	2.06	0.20
Garissa	1941.24	0.50	0.17	0.02
Wajir	1941.24	0.43	0.48	0.06
Mandera	1941.92	0.47	0.19	0.02
Siaya	1938.22	0.61	1.74	0.16
Kisumu	1939.50	0.50	2.51	0.28
Kisii	1940.43	0.48	2.41	0.24
South Nyanza	1939.69	0.53	1.68	0.17
West Pokot	1939.39	0.51	0.89	0.10
Baringo	1939.71	0.50	1.04	0.11
Nakuru	1940.42	0.43	3.69	0.41
Kericho	1940.59	0.43	2.43	0.26
Turkana	1940.29	0.46	0.38	0.04
Samburu	1938.88	0.49	0.54	0.06
Trans Nzoia	1940.70	0.39	3.83	0.44
Nandi	1939.69	0.49	1.84	0.17
Laikipia	1940.16	0.41	3.64	0.39
Narok	1939.43	0.48	1.43	0.15
Kajiado	1940.06	0.45	2.03	0.22
Elgeyo Marakwet	1939.57	0.54	1.56	0.13
Uasin Gishu	1940.52	0.42	3.54	0.39
Busia	1938.77	0.57	1.71	0.17
Kakamega	1939.90	0.56	2.82	0.27
Bungoma	1940.35	0.51	3.24	0.34

Note: Author's calculation is based on the 1969 census.

(June 2017) ISBN: 978-0- 9942689-2-1

units, which were districts before the 2010 Kenyan constitutional amendment. It is also more efficient to provide public goods in districts where the president's co-ethnics are concentrated. The Kenyan population census since the region's independence shows that every district has one dominant ethnic group. If ethnic favouritism operates at the district level, the local minority may also benefit from ethnic favouritism. In order to ascertain if ethnic favouritism operates at the district level, this study uses the following empirical model –

$$Yidt = \delta 0 + \delta 1 Yd0 + \delta 2 coethnic\_districtidt + \mu t + Xi\,\gamma + \upsilon idt \quad (2)$$

Yidt denotes the primary educational attainment of individual *i* in district *d* who started primary school in year *t*. In addition, *Yd0* is the average primary educational attainment for people who started this level of education in district *d* before independence, as a measure of the initial condition. Table 2 shows a comparison of key characteristics by district used to calculate the initial condition at the district level.

Moreover, *coethnic_districtidt* equals 1 if individual *i* started primary school at district *d*, where its dominant group shared ethnicity with the president in year *t.* This study changes the threshold of the dominant ethnic groups' population share when defining *coethnic_district* in order to verify whether the magnitude of ethnic favouritism differs. Additionally, μt denotes a year fixed effect, while *Xi* is a vector of individual level controls including dummies for religion, female, and local minority.

Table 3. Coethnic Dominant Districts Included in Different Thresholds

Threshold (%)	>30	>50	>70	>80	>90
District	Nairobi	Laikipia	Nandi	Baringo	Kiambu
		Nakuru		Kericho	Kirinyaga
		Uasin Gishu			Muranga
					Nyandarua
					Nyeri
					Elgeyo Marakwet
					West Pokot

Source: Author's calculation based on 1969 census.

Data

This study derives individual level data from five rounds of the KDHS, conducted from 1993 to 2014. The total sample size for this period is 88,744; however, as the 1993 and 1998 KDHS only surveyed seven Kenyan provinces, this study excludes 3,718 observations of the North Eastern province to maintain consistency. In the remaining 85,026 observations, 4,849 individuals started primary schooling before independence, which is used to calculate the initial conditions of different ethnic groups. Thus, the remaining 80,177 observations are used to measure the magnitude of ethnic favouritism.

Until the 2008 KDHS, information on the district ID was provided for each of the households sampled, however It was not possible to use the 1993 to 2008 KDHS data to conduct district level analysis because geographic information and specific names of these districts are not publicly available. The newly available 2014 KDHS is the first

(June 2017) ISBN: 978-0- 9942689-2-1

nationwide survey covering all 47 counties in Kenya and provides information on both ethnicity and residential area at the individual level; however, it no longer provides district-level information because of the 2010 constitutional amendment, which changed the administrative units into counties instead of the provinces and districts that had been used before. The initial condition at the district level is calculated using the 1969 census with a sample size of 344,401, collected from the Integrated Public Use Microdata Series (IPUMS) International. In alignment with the 1969 census data, this study recoded 47 counties in the 2014 KDHS according to the original 41 district boundaries. Additionally, information about the dominant ethnic group in each district was collected from the official report of the population and housing census in 1969, conducted by the Kenya National Bureau of Statistics.

Empirical Results

This study first investigates whether ethnic favouritism operates at the ethnic group level. Table 4 shows the results of analysis using the KDHS data from 1993 to 2014. All specifications in Table 4 control for ethnic group fixed effects, time (starting year of primary school) fixed effects, gender, and religion. The estimated results in panel A show that after controlling for the initial condition, which significantly influences current primary education attainment, having a co-ethnic president at the time of starting primary school is expected to increase the length of education at this level by around 0.19 years and the probability of completing primary school by about 3 per cent. Compared with the effect of early exposure to education during the colonial era, the effect of ethnic favouritism on educational attainment is comparatively small. Moreover, it is also smaller than the estimations of recent studies, such as Kramon and Posner (2016), which estimate a 0.36 years of increase of primary school. This suggests that measuring the effect of ethnic favouritism without considering the initial disparities may lead to overestimation.

Table 4. Ethnic Favouritism: Evidence from Primary Education

Dependent Variable	Years of Primary Schooling		Primary Completion	
Panel A	(1)	(2)	(3)	(4)
Initial Condition	0.410***	0.409***	0.502***	0.502***
	(0.0120)	(0.0120)	(0.0133)	(0.0133)
Coethnic	0.185***	0.00969	0.0275***	0.0172*
	(0.0219)	(0.0313)	(0.00585)	(0.00879)
Female*Coethnic		0.247***		0.0145
		(0.0341)		(0.00952)
Number of Observations	79577	79577	79580	79580
R-squared	0.230	0.231	0.111	0.111
Panel B				
Initial Condition	0.411***	0.411***	0.504***	0.504***
	(0.0120)	(0.0120)	(0.0133)	(0.0133)
Coethnic	0.281***	0.113***	0.0458***	0.0487***
	(0.0261)	(0.0356)	(0.00677)	(0.00970)
Female*Coethnic		0.240***		-0.00409
		(0.0382)		(0.0103)
Number of Observations	79577	79577	79580	79580
R-squared	0.231	0.231	0.112	0.112

Note: KDHS 1993–2014 are used for estimation. All specifications include the female dummy, religion dummies, ethnic group fixed effect, and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, ** and *** denote significance at the 10 per cent level, 5 per cent level,

(June 2017) ISBN: 978-0- 9942689-2-1

and 1 per cent level, respectively. Coethnic in panel A is defined using the first approach, and otherwise for panel B.

It is worth noting that even though the estimated results in columns (2) and (4) of Table 4 show that ethnic favouritism has a significant effect on the years of primary schooling for females, a longer period at primary school did not lead to a higher probability of completion. The estimated results in panel B of Table 4 show results similar to those of panel A, notwithstanding that a different approach is used for defining the variable coethnic. For simplicity of interpretation, coethnic is defined using the first approach in the tables to follow. If ethnic favouritism operates at the ethnic group level, the president's coethnics who are outside coethnic-dominant districts can benefit from ethnic favouritism no matter where they live. In order to test this, this study includes an interaction term between the variable coethnic and the dummy variables for every *coethnic_district*. It re-estimates the first model using data from the 2014 KDHS to obtain the results shown in Table 5. The data indicate that coethnics living outside the 14 co-ethnic districts did not benefit from ethnic favouritism, which suggests that ethnic favouritism does not operate at the ethnic group level. In addition, the estimated results in columns (2) and (4) demonstrate different patterns of ethnic favouritism in different districts. In Kikuyu-dominant districts, with the exception of the two Kikuyu presidents' two home districts (i.e. Kiambu District for President Kenyatta and Nyeri District for President Kibaki), only the Nakuru District is estimated to have benefitted from ethnic favouritism.

One possible explanation is that the Nakuru District is a swing voter district, as classified in Morjaria (2011), and the two Kikuyu presidents targeted the swing voters instead of core supporters for political gain. The same argument can also be applied to the Uasin Gishu District, one of the Kalenjin-dominant districts. Similar to the other two Kikuyu presidents, President Moi also favoured his home district, Baringo, in terms of primary education. However, the estimated results show that he adopted different strategies toward his core supporters. Compared to the Kikuyu, the Kalenjin is a recently politicized ethnicity and consists of seven Nandi-speaking ethnic groups (Weber, Hiers, and Flesken 2015). Thus, it is highly possible that the Kalenjin people demonstrate culturally heterogeneous preferences toward education; for example, the preferences of the pastoral people, Pokot, may vary from those of other Kalenjin sub-groups. Formal schooling is not typically a priority for pastoral people (Narman 1990), so the negative effect of ethnic favouritism estimated in Table 5 for the West Pokot district seems reasonable (see table below).

Additionally, in order to test whether ethnic favouritism operates at the district level, this study estimates the second model using KDHS 2014. Table 6 presents the estimated results, which suggests that people living in a *coethnic_district* are expected to attain 0.27 years more primary education. However, on average, the local minority did not benefit from ethnic favouritism, as they are predicted to spend 0.58 fewer years in primary schools.

Despite Kenyan districts being largely ethnically homogenous, the extent of ethnic homogeneity is quite different, as shown in both Table 2 and Appendix 1. For example, in Kikuyu-dominant districts, the population share of Kikuyu ranges from more than 30 per cent to more than 90 per cent. Considering the efficiency of ethnic favouritism, it is

(June 2017) ISBN: 978-0- 9942689-2-1

reasonable to expect that the magnitude of ethnic favouritism increases as the population share of the dominant group increases. Thus, this study redefined the variable *coethnic_district* using different thresholds of the dominant ethnic groups' population share. In Table 7, the estimated results show that the more homogenous the coethnic district is, the more benefits the district is estimated to get from ethnic favouritism. After excluding the potential cultural heterogeneity in Kalenjin-dominant districts, the estimated results in column (5) present a significantly positive effect for ethnic favouritism.

Not only does the extent of ethnic favouritism vary according to the different thresholds of the variable *coethnic_district*, but the magnitude of the benefits local minorities may receive from ethnic favouritism also differs. The estimated results in columns (1), (2), (3), and (5) of Table 8 (below) shows that as the population share of the dominant ethnic group increases, the level of disadvantage of local minorities also tends to increase.

Robustness Checks: Two Types of Time Lag

Two types of time lag may exist when investigating ethnic favouritism in primary education. The first is the policy implementation time lag that occurs when policies are not immediately put in place upon appointment of the co-ethnic presidents. Thus, this study integrates a one-year and two-year time lag when coding the main dependent variables, co-ethnic and *coethnic_district*. The second is the primary education starting time lag, which exists to account for the large number of over-aged children joining or re-joining primary schools due to policy changes (Vos *et al* 2004). Late enrolment and re-enrolment are taken into account when coding the two main dependent variables.

Panel A and panel B of Table 9 and Table 10, respectively, show the estimated results for the two time lags at both the ethnic group level and district level. Compared to the policy implementation time lag, estimated results suggest that the primary education starting time lag is more relevant to Kenya, since the magnitude of ethnic favouritism increases in tandem with the time lag of years of starting primary school.

Gender-Specific Time Trend

To verify if the gender-specific time trend eliminates the effect of ethnic favouritism toward females, this study re-estimates the regression model in Table 1 to include both female- and male-specific time trends. After controlling for gender-specific time trends, the estimated results in panel C in Table 9 show that having a co-ethnic president positively influences both the length of primary education and the completion rate for female students, which confirms the argument from previous studies that females are more responsive to policy interventions (e.g. Franck and Rainer 2012; Glewwe and Kremer 2006). Implementing policies that are favourable toward female students may, therefore, be effective in improving their educational attainment.

(June 2017) ISBN: 978-0- 9942689-2-1

Table 5. Ethnic Favouritism: Evidence from Coethnics in Coethnic Districts

	Years of Primary Schooling		Primary Completion	
	(1)	(2)	(3)	(4)
Initial Condition	0.436***	0.442***	0.371***	0.373***
	(0.0184)	(0.0188)	(0.0196)	(0.0197)
Coethnic	0.100***	0.0252	0.0290***	-0.0209
	(0.0296)	(0.0609)	(0.00871)	(0.0185)
Kikuyu Dominant District				
Coethnic*Nairobi		-0.0293		0.165***
		(0.0871)		(0.0353)
Coethnic*Laikipia		0.0970		0.0217
		(0.0980)		(0.0341)
Coethnic*Nakuru		0.320***		0.105***
		(0.0958)		(0.0297)
Coethnic*Kiambu		0.152*		0.128***
		(0.0906)		(0.0315)
Coethnic*Kirinyaga		-0.215*		-0.0163
		(0.110)		(0.0355)
Coethnic*Muranga		-0.162		0.00753
		(0.0999)		(0.0318)
Coethnic*Nyandarua		0.0775		0.0906***
		(0.100)		(0.0320)
Coethnic*Nyeri		0.157*		0.113***
		(0.0828)		(0.0272)
Kalenjin Dominant District				
Coethnic*Uasin Gishu		0.434***		0.112***
		(0.0764)		(0.0258)
Coethnic*Nandi		0.379***		0.0512**
		(0.0760)		(0.0255)
Coethnic*Kericho		0.460***		0.0548**
		(0.0666)		(0.0218)
Coethnic*Baringo		0.302***		0.127***
		(0.0924)		(0.0273)
Coethnic*West Pokot		-1.972***		-0.298***
		(0.147)		(0.0263)
		(0.0748)		(0.0239)
Number of Observations	41444	41444	41444	41444
R-Squared	0.250	0.262	0.143	0.152
F Statistics	190.3	159.6	163.4	138.5

Note: KDHS 2014 is used for estimation. All specifications include the female dummy, religion dummies, ethnic group fixed effect, and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** denote significance at the 10 per cent level, 5 per cent level, and 1 per cent level, respectively.

(June 2017) ISBN: 978-0- 9942689-2-1

Table 6. Ethnic Favouritism at District Level

Dependent Variable	Years of Primary Schooling		Primary Completion	
	(1)	(2)	(3)	(4)
Initial Condition	0.671***	0.675***	0.863***	0.866***
	(0.0114)	(0.0114)	(0.0177)	(0.0177)
Coethnic District	0.274***	0.384***	0.0306***	0.0393***
	(0.0239)	(0.0244)	(0.00596)	(0.00650)
Local minority* Coethnic District		-0.577***		-0.0455***
		(0.0639)		(0.0137)
Constant	2.477***	2.470***	0.370***	0.370***
	(0.332)	(0.332)	(0.0601)	(0.0601)
Number of Observations	43856	43856	43856	43856
R-squared	0.295	0.296	0.154	0.154
F Statistics	293.4	290.2	209.7	206.0

Note: KDHS 2014 is used for estimation. All specifications include the female dummy, religion dummies and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** denote significance at the 10 per cent level, 5 per cent level, and 1 per cent level, respectively.

(June 2017) ISBN: 978-0- 9942689-2-1

Table 7, Ethnic Favouritism at District Level, Different Thresholds

	(1)	(2)	(3)	(4)	(5)
Threshold (%)	Share>30	Share>50	Share>70	Share>90	Share>90 West Pokot excluded
Panel A	Years of Primary Schooling				
Initial Condition	0.671***	0.673***	0.690***	0.676***	0.648***
	(0.0114)	(0.0114)	(0.0115)	(0.0115)	(0.0116)
Coethnic District	0.274***	0.303***	0.479***	0.212***	0.485***
	(0.0239)	(0.0242)	(0.0266)	(0.0417)	(0.0336)
Number of Observations	43856	43856	43856	43856	43077
R-Squared	0.295	0.295	0.297	0.294	0.298
Panel B	Primary Completion				
Initial Condition	0.863***	0.865***	0.881***	0.870***	0.815***
	(0.0177)	(0.0177)	(0.0177)	(0.0177)	(0.0179)
Coethnic District	0.0306***	0.0316***	0.0498***	0.0617***	0.143***
	(0.00596)	(0.00602)	(0.00663)	(0.00922)	(0.00975)
Number of Observations	43856	43856	43856	43856	43077
R-Squared	0.154	0.154	0.155	0.154	0.156

Note: KDHS 2014 is used for estimation. All specifications include the female dummy, religion dummies and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** denote significance at the 10 per cent level, 5 per cent level, and 1 per cent level, respectively.

(June 2017) ISBN: 978-0- 9942689-2-1

Table 8, Ethnic Favouritism at District Level, Different Thresholds and Local Minority

	(1)	(2)	(3)	(4)	(5)
Threshold (%)	Share>30	Share>50	Share>70	Share>90	Share>90 West Pokot excluded
Panel A	Years of Primary Schooling				
Initial Condition	0.675***	0.675***	0.688***	0.677***	0.648***
	(0.0114)	(0.0114)	(0.0115)	(0.0115)	(0.0116)
Coethnic District	0.384***	0.397***	0.522***	0.190***	0.515***
	(0.0244)	(0.0246)	(0.0268)	(0.0430)	(0.0332)
Local Minority*Coethnic District	-0.577***	-0.526***	-0.333***	0.311*	-0.552***
	(0.0639)	(0.0679)	(0.0897)	(0.164)	(0.200)
Number of Observations	43856	43856	43856	43856	43077
R-squared	0.296	0.296	0.297	0.294	0.298
Panel B	Primary Completion				
Initial Condition	0.866***	0.867***	0.880***	0.870***	0.814***
	(0.0177)	(0.0177)	(0.0178)	(0.0177)	(0.0179)
Coethnic District	0.0393***	0.0394***	0.0544***	0.0626***	0.153***
	(0.00650)	(0.00654)	(0.00700)	(0.00949)	(0.00982)
Local Minority*Coethnic District	-0.0455***	-0.0440***	-0.0354*	-0.0131	-0.183***
	(0.0137)	(0.0143)	(0.0186)	(0.0369)	(0.0490)
Number of Observations	43856	43856	43856	43856	43077
R-squared	0.154	0.154	0.155	0.154	0.157

Note: KDHS 2014 is used for estimation. All specifications include the female dummy, religion dummies and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** denote significance at the 10 per cent level, 5 per cent level, and 1 per cent level, respectively

(June 2017) ISBN: 978-0- 9942689-2-1

Table 9. Robustness Checks, Ethnic Group Level

	(1)	(2)	(3)	(4)
Dependent Variable	Years of Primary Schooling		Primary Completion	
Time Lag	1 year	2 years	1 year	2 years
Panel A	Policy implementation time lag			
Initial Condition	0.409***	0.409***	0.502***	0.502***
	(0.0120)	(0.0120)	(0.0133)	(0.0133)
Coethnic	0.144***	0.101***	0.0160***	0.00538
	(0.0217)	(0.0215)	(0.00583)	(0.00581)
Number of Observations	79577	79577	79580	79580
R-squared	0.230	0.230	0.111	0.111
Panel B	Primary Start time lag			
Initial Condition	0.410***	0.411***	0.503***	0.503***
	(0.0120)	(0.0120)	(0.0133)	(0.0133)
Coethnic	0.224***	0.246***	0.0321***	0.0354***
	(0.0221)	(0.0223)	(0.00589)	(0.00596)
Number of Observations	79577	79577	79580	79580
R-squared	0.231	0.231	0.111	0.112
Panel C	Gender-Specific Time Trend			
	linear	quadratic	linear	quadratic
Initial Condition	0.406***	0.406***	0.498***	0.498***
	(0.0120)	(0.0120)	(0.0133)	(0.0133)
Coethnic	-0.0342	-0.0447	0.00709	0.00660
	(0.0312)	(0.0313)	(0.00883)	(0.00884)
Female* Coethnic	0.311***	0.325***	0.0294***	0.0300***
	(0.0343)	(0.0345)	(0.00959)	(0.00962)
Number of Observations	79577	79577	79580	79580
R-squared	0.235	0.235	0.116	0.116

Notes: KDHS 1993–2014 are used for estimation. All specifications include female dummy, religion dummies, ethnic group fixed effect, and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** respectively denote significance at the 10, 5, and 1 per cent levels.

Proceedings of the 39th *African Studies Association of Australasia and the Pacific* (AFSAAP) Annual Conference, 5-7 December 2016, The University of Western Australia.
(June 2017) ISBN: 978-0- 9942689-2-1

Table 10. Robustness Checks, District Level

	(1)	(2)	(3)	(4)
Dependent Variable	Years of Primary Schooling		Primary Completion	
Time Lag	1 year	2 years	1 year	2 years
Panel A	Policy implementation time lag			
Initial Condition	0.672***	0.672***	0.865***	0.866***
	(0.0114)	(0.0114)	(0.0177)	(0.0177)
Coethnic District	0.276***	0.255***	0.0211***	0.0117**
	(0.0239)	(0.0239)	(0.00599)	(0.00596)
Number of Observations	43856	43856	43856	43856
R-squared	0.295	0.295	0.154	0.154
Panel B	Primary Start time lag			
Initial Condition	0.670***	0.670***	0.861***	0.861***
	(0.0115)	(0.0115)	(0.0177)	(0.0177)
Coethnic	0.277***	0.297***	0.0368***	0.0397***
	(0.0240)	(0.0248)	(0.00593)	(0.00605)
Number of Observations	43856	43856	43856	43856
R-squared	0.295	0.295	0.154	0.154

Note: KDHS 2014 is used for estimation. All specifications include the female dummy, religion dummies and years of starting primary school fixed effect. Robust standard errors are shown in parentheses. *, **, and *** respectively denote significance at the 10, 5, and 1 per cent level.

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(June 2017) ISBN: 978-0- 9942689-2-1

Conclusions

The difference in the socio-economic achievements across diverse ethnic groups has persisted in Kenya since its independence; however, previous studies have not investigated whether this disparity is due to the colonial legacy or ethnic favouritism since independence. This study helps differentiate between their effects on the current disparity in Kenyan primary educational attainment across ethnic groups over time. Moreover, it also provides insight on the mechanism through which ethnic favouritism operates.

Indirect evidence from previous studies shows that ethnic favouritism is prevalent in Kenyan primary education; however, the magnitude of ethnic favouritism is smaller than the estimations of previous studies. The current study's estimated results show that having a co-ethnic president when individuals begin their primary schooling correlates to an increase of around 0.19 years of primary education. This effect, however, is not equal for all co-ethnics of the sitting presidents. Only the co-ethnics living in a co-ethnic-dominant district benefit from this favouritism, which suggests that ethnic favouritism operates at a district level.

Moreover, the extent of ethnic favouritism varies depending on each district's population share of the in-power president's co-ethnics. Generally, the magnitude of benefits increases as the population share of the dominant ethnic group in the districts increases. However, in districts where more than 90 per cent of the inhabitants share ethnicity with the sitting president, the magnitude of ethnic favouritism differs according to the president's coalition-building strategies. Moreover, as the population share of the dominant ethnic group in the districts increases, the level of disadvantage of local minorities tends to increase. It is worth noting that having a co-ethnic president has a significant and positive effect on the education of females. This study's results support former studies' findings that females are more responsive to policy interventions (e.g. Franck and Rainer 2012; Glewwe and Kremer 2006). Providing favourable policy toward females may thus be effective in improving their educational attainment. Despite the availability of information on how education-related public resources were allocated under presidents of different ethnic groups, data limitations prevented this study from showing direct evidence of ethnic favouritism. Additionally, this study does not provide direct evidence to clarify the specific mechanisms through which ethnic favouritism operates.

In line with Kramon and Posner (2016), the estimated results in Table 5 suggest that ethnic favouritism does not operate through the demand-side mechanism. If ethnic favouritism operated at the ethnic group level, demand factors (e.g. personal monetary gain and expectation of higher return from education) might promote the primary educational attainment of co-ethnics regardless of where they lived and whether they could obtain a disproportionately positive allocation of public resources. However, the estimated results in Table 5 show that co-ethnics living outside co-ethnic-dominant districts do not benefit from ethnic favouritism.

Furthermore, the current study's estimated results show that ethnic favouritism operates at the district level and that the magnitude of ethnic favouritism generally increases in tandem with the dominant ethnic group's population share in the co-ethnic district. One

possible explanation for this is that supply factors such as school construction and the hiring of teachers affect primary educational attainment, and it is more efficient to provide education-related supplies in highly homogeneous districts. This also provides indirect evidence that ethnic diversity undermines educational public provision, which is consistent with findings in previous studies, such as Miguel and Gugerty (2005). However, in the most homogenous districts, the effect of ethnic favouritism demonstrates mixed results, which may be attributed to, for example, the heterogeneity within Kalenjin-dominant districts.

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(June 2017) ISBN: 978-0- 9942689-2-1

Appendix 1. Districts and Dominant Ethnic Groups Over Time

Province	District	1969 census		1979 census		1989 census	
		Ethnicity	Share	Ethnicity	Share	Ethnicity	Share
Central	Kiambu	Kikuyu	94.5	Kikuyu	90.6	Kikuyu	88.0
Central	Kirinyaga	Kikuyu	96.4	Kikuyu	96.9	Kikuyu	97.0
Central	Muranga	Kikuyu	96.2	Kikuyu	95.5	Kikuyu	95.9
Central	Nyandarua	Kikuyu	94.7	Kikuyu	95.1	Kikuyu	95.7
Central	Nyeri	Kikuyu	97.8	Kikuyu	96.8	Kikuyu	96.6
Coast	Kilifi	Mijikenda	91.8	Mijikenda	88.4	Mijikenda	90.3
Coast	Kwale	Mijikenda	83.0	Mijikenda	82.0	Mijikenda	82.6
Coast	Lamu	Bajun	65.7	Bajun	45.8	Bajun	40.4
Coast	Mombasa	Mijikenda	23.9	Mijikenda	25.8	Mijikenda	27.9
Coast	Taita Taveta	Taita	78.5	Taita	75.8	Taita	71.5
Coast	Tana River	Pokomo	57.4	Pokomo	35.2	Pokomo	37.0
Eastern	Embu	Embu	61.0	Embu	62.5	Embu	60.5
Eastern	Isiolo	Boran	52.7	Boran	49.2	Boran	34.2
Eastern	Kitui	Kamba	97.3	Kamba	97.0	Kamba	97.0
Eastern	Machakos	Kamba	97.7	Kamba	96.7	Kamba	97.0
Eastern	Marsabit	Rendille	34.3	Boran	31.6	Boran	28.2
Eastern	Meru	Meru	90.0	Meru	96.5	Meru	89.0
Nairobi	Nairobi	Kikuyu	37.6	Kikuyu	33.4	Kikuyu	32.4
Nyanza	Kisii	Kisii	98.0	Kisii	98.0	Kisii	98.2
Nyanza	Kisumu	Luo	90.7	Luo	89.9	Luo	89.2
Nyanza	Siaya	Luo	96.4	Luo	96.7	Luo	95.8
Nyanza	South Nyanza	Luo	88.7	Luo	79.1	Luo	76.5
Rift Valley	Baringo	Kalenjin	85.0	Kalenjin	84.8	Kalenjin	83.8
Rift Valley	Elgeyo Marakwet	Kalenjin	96.5	Kalenjin	93.4	Kalenjin	91.3
Rift Valley	Kajiado	Masai	68.6	Masai	62.8	Masai	56.6
Rift Valley	Kericho	Kalenjin	81.4	Kalenjin	82.7	Kalenjin	82.7
Rift Valley	Laikipia	Kikuyu	57.5	Kikuyu	64.4	Kikuyu	67.8
Rift Valley	Nakuru	Kikuyu	58.2	Kikuyu	60.8	Kikuyu	59.7
Rift Valley	Nandi	Kalenjin	78.1	Kalenjin	70.7	Kalenjin	73.6
Rift Valley	Narok	Masai	66.5	Masai	56.2	Masai	47.3
Rift Valley	Samburu	Samburu	74.1	Samburu	75.0	Samburu	74.7
Rift Valley	Trans Nzoia	Luhya	47.1	Luhya	49.3	Luhya	52.0
Rift Valley	Turkana	Turkana	98.9	Turkana	96.2	Turkana	94.5
Rift Valley	Uasin Gishu	Kalenjin	53.2	Kalenjin	55.0	Kalenjin	52.6
Rift Valley	West Pokot	Kalenjin	93.4	Kalenjin	88.8	Kalenjin	85.2
Western	Bungoma	Luhya	83.5	Luhya	81.4	Luhya	82.8
Western	Busia	Luhya	65.1	Luhya	59.5	Luhya	61.4
Western	Kakamega	Luhya	95.6	Luhya	94.6	Luhya	94.5

Note: The term “Kalenjin” was first used as an ethnic category in the 1979 census. In the 1969 census, the Kalenjin population share is calculated as the summation of its seven sub-tribes (Tugen, Nandi, Kipsigis, Elgeyo, Marakwet, Pokot, and Sabaot) for consistency with the later census.