



Failed Policy? The Effects Of Kenya's Education Reform: Use Of Natural Experiment And Regression Discontinuity Design

By: Hye-Sung Kim

Abstract

Objective: Kenya's 1985 education reform implemented curriculum changes to prepare children for the job market and changed the instructional language from English to local ethnic languages during the first three years of primary education. This article examines the reform's impact on (i) level of education completed, (ii) income level, and (iii) preference for national versus ethnic interests. **Methods:** Using survey data collected from randomly selected Kenyan citizens in Nairobi, this article uses a regression discontinuity (RD) design comparing the first cohort exposed to the reform to those who were not. **Results:** The education and income levels of those beginning their education under the reform were higher. The reform did not influence preference for national or ethnic interests. **Conclusions:** The reform partially increased children's job market preparation but was unsuccessful in addressing unemployment. Teaching children in local languages exhibited no negative effects on ethnic as opposed to national interests.

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Failed Policy? The Effects of Kenya's Education Reform: Use of Natural Experiment and Regression Discontinuity Design

Hye-Sung Kim , Winthrop University

Objective. Kenya's 1985 education reform implemented curriculum changes to prepare children for the job market and changed the instructional language from English to local ethnic languages during the first three years of primary education. This article examines the reform's impact on (i) *level of education completed*, (ii) *income level*, and (iii) *preference for national versus ethnic interests*. *Methods.* Using survey data collected from randomly selected Kenyan citizens in Nairobi, this article uses a regression discontinuity (RD) design comparing the first cohort exposed to the reform to those who were not. *Results.* The education and income levels of those beginning their education under the reform were higher. The reform did not influence preference for national or ethnic interests. *Conclusions.* The reform partially increased children's job market preparation but was unsuccessful in addressing unemployment. Teaching children in local languages exhibited no negative effects on ethnic as opposed to national interests.

Several post-independence Sub-Saharan African countries (SSAs) have made a series of education reforms aiming to improve the education attainment and labor market outcomes of their respective populations. Scholarship has found positive impacts of such reforms on enrollment (Seid, 2016), literacy, education levels, wages (Eriksson, 2014), newspaper readership (Ramachandran, 2017), and decreased rates of teenage marriage and child-bearing (Pradhan and Canning, 2016), among other social and cultural phenomena. An example of this initiative aimed at improving the unemployment problem among young people is Kenya's 1985 education reform (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1990, 1992; Wycliffe, Samson, and Ayuya, 2013). Despite its objective of providing students with practical skills to resolve persistent unemployment problems, the education reform received much criticism for its ineffectiveness, eventually resulting in another reform in 2017. However, many of these conclusions regarding the reform's ineffectiveness were drawn from anecdotal evidence without a rigorous evaluation of the causal effects of the education system. This article tests whether the criticism regarding the ineffectiveness of Kenya's 1985 reform is supported by causal evidence.

The education reforms that have been undertaken in several SSAs since their independence share one common element: a change in instructional language in the early years of primary education from an official language to students' local ethnic languages. However, the impact of reform outcomes varies depending on the country and policy examined. While positive impacts on various policy outcomes have been found in Ethiopia (Pradhan and Canning, 2016; Ramachandran, 2017; Seid, 2016), Ghana (Rosekrans, Sherris, and Chatry-Komarek, 2012), and South Africa (Eriksson, 2014) after the reforms, a negligible impact has been found on educational outcomes in Kenya (Piper, Zuilkowski, and Ong'ele,

Direct correspondence to Hye-Sung Kim, Department of Political Science, Winthrop University, 326 Bancroft Hall, 701 Oakland Avenue, Rock Hill, SC 29733 (kimh@winthrop.edu).

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2016; Piper et al., 2018). In addition, studies predict that the use of ethnic languages as opposed to a common national language can be detrimental in promoting interethnic cooperation (Miguel, 2004).

This article examines the impact of Kenya's education policy on three long-term policy outcomes: (i) level of education completed, (ii) income level, and (iii) preference between ethnic versus national interests; it does so by using Kenya's 1985 education reform as a test case. The reform introduced three main changes. First, it changed the number of years allocated to each level of education. The reform required eight years to be spent in primary education and four years each in secondary and tertiary education, respectively (known as the "8-4-4 system"). Prior to that, Kenya had the "7-4-2-3" system, under which seven years were spent in primary, four in lower secondary, two in upper secondary, and three in university education. Second, this reform introduced curriculum changes to prepare children for the job market to address the persistent unemployment among young people by emphasizing prevocational and vocational subjects in school curriculum. The third main change was that English was replaced as the instructional language during the first three years of primary education with students' local ethnic languages (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1990, 1992; Wycliffe, Samson, and Ayuya, 2013).

To estimate the causal effects of Kenya's 1985 education reform, this article uses a regression discontinuity (RD) design comparing the cohorts that were first exposed to such reform and those that were not by using original survey data collected from randomly selected Kenyan citizens in Nairobi, aged 18 and above. Because the 1985 reform was introduced abruptly and without much planning (Amutabi, 2003) and introduced an exogenous change in the type of instructions and curriculum one could receive, this study regards Kenya's 1985 education reform as a natural experiment. It compares data from the respondents who had recently turned six in January 1985 or later and so were eligible to start their education under the 8-4-4 system (i.e., the treatment group) with the data from those who were six or older before January 1985 and underwent the original curriculum (i.e., the control group). The analysis shows the positive, significant impact of the reform on the level of education completed and upon income levels; it shows no impact on having allegiance to one's ethnic interests or national interests. The results suggest that the reform fulfilled its objectives in increasing the job market outcome of children to some extent by changing the instructional language to one's local ethnic language during early primary education. The results also suggest that teaching children in local ethnic languages rather than a national-cohesive language such as English or Swahili had no negative effects on ethnic cooperation by increasing ethnic as opposed to national interests.

Kenya's 1985 Education Reform

The term "8-4-4 system" refers to the education system that was introduced in 1985 under the leadership of President Daniel arap Moi, comprising eight years in primary, four years in secondary, and four years in postsecondary education. The 1985 educational reform was a major undertaking that replaced the previous "7-4-2-3 system" that had existed since 1964 and consisted of seven years of primary education, four years of lower secondary education, two years of upper secondary education, and three years of postsecondary education (Amutabi, 2003; Sifuna, 1992). The 1985 reform was motivated by a drive to improve curriculum to provide students with more employable skills and training by addressing the main criticism regarding the previous 7-4-2-3 system, namely, the lack of practical training and skills that could provide students with employment opportunities

after graduation. The 7-4-2-3 system had also been viewed as too “academically oriented” and dependent upon test-based education (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1992).

The 1985 reform included major curriculum and instructional changes compared to the previous system. The curriculum change entailed a change in curriculum design by introducing and emphasizing “prevocational subjects” such as “agriculture, art and crafts and home science” (Sifuna, 1992:135) so that students could gain basic knowledge and appreciation of skills that would be helpful in the labor market. This curriculum change is in line with a primary objective of the education reform that established the 8-4-4 system: provision of a practically oriented curriculum that equips graduates with skills and knowledge for employment opportunities (Sifuna, 1992:134–35).

The key change in terms of instruction was in the instruction language, particularly in primary education. The reform required that instruction language in the first three years of primary education be the “language of the catchment area,” the vernacular of the area where the school was located. All pupils were to be taught in English beginning in the fourth year. In addition, English and Swahili were “compulsory and examinable subjects in primary schools” under the new 8-4-4 system (Timammy and Oduor, 2016; Trudell and Piper, 2014; Piper, Zuilkowski, and Ong’ele, 2016). In 7-4-2-3 system, English was the primary instruction language in primary schools from the beginning (Anderson, 1965).

Long-Term Impacts of Kenya’s 1985 Education Reform: Literature and Hypotheses

Intended Consequences of the Reform

Empirical evidence suggests that the language of instruction policy requiring students’ first few years of primary education to be taught in their ethnic mother tongue has positive impacts on education outcomes in other subjects like English and mathematics (Laitin and Ramachandran, 2016; Seid, 2019), educational attainment (Seid, 2016), access to jobs, and, hence, higher income (Eriksson, 2014). Laitin and Ramachandran (2016), based on data from South Africa and Cameroon, have shown the positive impact of early primary school education taught in vernacular mother tongue on learning outcomes in English and mathematics. Using data from Ethiopia, Seid (2019) found a similar result, showing that students who learn in their local ethnic languages during earlier years of education had higher mathematics test scores during upper grades, taught in English. Laitin and Ramachandran (2016) and Seid (2019) both show that learning in one’s local ethnic language in earlier grades can improve students’ comprehension in English in later grades, even when they learn nonlanguage subjects. Cleghorn, Merritt, and Abagi (1989) found that the use of English as a language of instruction in part of primary school education hampers students’ learning outcome. They argue that the teachers’ quality of teaching closely affects students’ understanding, and instruction in English, which is often the third language of teachers, results in lower-quality teaching and hampers students’ understanding of subjects (McCoy, 2017).

Scholars have also found the positive effects of early instruction in local ethnic languages on other educational attainment indicators such as enrollment, education levels, wages, and interethnic cooperation. For example, by examining the effectiveness of Ethiopia’s 1994 reforms, Seid (2016) found positive and significant impacts of instructions in local ethnic languages in earlier years of primary education on enrollments rates and students’ enrollment in correct grades. Eriksson (2014) examined the impact of the 1955 Bantu Education Act on primary school education in South Africa and found an increase in

literacy, education levels, and wages were the results of increasing the duration of instruction in local ethnic languages. Laitin and Ramachandran (2015) found a statistically significant link between language policy and educational, health, and occupational outcomes by showing that multilingual countries with a large proportion of the population speaking a nonofficial language tend to lack high-quality outcomes. The association between the multilingual environments and these outcomes, they argue, is attributable to the fact that English (or the official language), often a colonial language, continues to provide access to education, desirable jobs, and social networks. Hence, speaking a nonofficial language indicates a lack of access to these opportunities.

The empirical evidence and theoretical implications discussed above suggest the following:

Hypothesis 1: Those who are educated under the 8-4-4 system are more likely to have attained a higher level of education and earned higher income than those educated under the 7-4-2-3 system.

Miguel (2004) presents the thesis that interethnic cooperation is attributable to the government's nation-building efforts through language policy and school curriculum. Using the colonial boundary between Tanzania and Kenya as a natural experiment, Miguel found that in Kenya, where English, the colonial language, was the medium of instruction in school, there was a negative and statistically significant correlation between ethnic diversity and ethnic cooperation. No negative association was found in villages in Tanzania where nation-building was emphasized in the school curriculum and Swahili (the national language) was implemented as the sole language of instruction. Therefore, using the local ethnic language as the primary instructional language in first three years of primary education instead of using a coherent language is not likely to develop national unity among young students. It can highlight differences across ethnic groups, and cause students to develop preferences toward ethnic (as opposed to national) interests. I therefore developed the following hypothesis:

Hypothesis 2: Those who are educated under the 8-4-4 system, compared to those educated under the 7-4-2-3 system, are likely to develop ethnic rather than national interests.

Unintended Consequences Due to Imperfect Implementation

A significant amount of evidence, however, suggests that a serious gap existed between the planned changes in the 1985 education reform in Kenya and actual implementation of these measures. For example, Trudell and Piper (2014) report that a local ethnic language is rarely used in teaching nonlanguage subjects in practice. In addition, a lack of basic resources (Sifuna, 1992) and of teacher training prior to the implementation of the reform (Amutabi, 2003) prevented the successful implementation of the teaching of prevocational subjects to students. Despite the reform's mandate that students are supposed to be taught in their local ethnic languages in the first three years of primary education, some evidence finds that there has been a mixing of English, Swahili, and a local ethnic language in actual instructions (Glewwe, Kremer, and Moulin, 2009:114). When a local ethnic language is used as an additional or complementary medium of instruction together with English or Swahili, the learning outcomes are likely to differ from when a local ethnic language is used as a sole medium of instruction. Piper, Zuilkowski, and Ong'ele (2016) and Piper et al. (2018) examined the "additive" impact of mother-tongue instruction on learning

outcomes using randomized controlled trial data from Kenya and found that teaching students in their local ethnic language, English, and Swahili did not improve literacy even in the students' native languages compared to when the local ethnic language was not used in instruction.

Kenya's 1985 education reform may have been implemented incompletely given the evidence for the lack of resources, students' low level of interest in learning prevocational subjects, and imperfect implementation of instructing students in their local ethnic languages as a sole medium of instruction during the first three years of education. These factors may have undermined the reform's intended impact, and lead to the following hypothesis:

Hypothesis 3: Those who are educated under the 8-4-4 system, compared to those educated under the 7-4-2-3 system, are likely to show no difference in the level of education completed, income level, and ethnic rather than national interests.

Data and Methodology

Data

The data were collected through an opinion survey targeting 1,400 randomly selected Kenyans residing in Nairobi aged 18 and above. A random stratified sampling strategy was implemented by using Nairobi's polling stations for the 2017 general election as sampling points. In addition, 13 field interviewers used a random-walk method to select households. Data collection took place from June 6 through June 21, 2018. The survey instruments included a set of questions on the year and month born, education level, occupation, income level, ethnicity, and ethnic versus national interests. Approximately 1,329 respondents completed the survey. The birth year and month were collected to determine in which primary education system survey respondents participated.

Choosing Dependent Variables: Measuring the Long-Term Effect

The first of the three long-term outcome variables under study, *the level of education completed*, was measured by an ordered scale, based on the answer to the survey question: "What is the highest level of education you have completed?" Higher numbers were assigned to responses indicating higher levels of education completed, ranging from 1 (no formal schooling) to 17 (graduate degree).

The second outcome variable, *income level*, was also measured as an ordered scale using the answers to the question: "During a typical month, how much do you earn?" Answers were grouped into five categories with higher numbers indicating higher monthly earnings.¹

The third outcome variable, *ethnic interest*, indicates whether the respondent's indicated allegiance was to his or her ethnic interests or national interests, based on the answer to the question: "Which of these statements best describes your view?" Answers included "Political leaders should always consider the needs of all tribes in Kenya," and "Because

¹The scale 1 indicates "less than 15,000 KSh (equivalent to 150 USD)," 2 for "15,000–30,000 KSh (equivalent to 150–300 USD)," 3 for "30,000–50,000 KSh (300–500 USD)," 4 for "50,000–80,000 KSh (500–800 USD)," and 5 for "More than 80,000 KSh (more than 800 USD)."

of how politics work in Kenya, political leaders should take care of their own tribes first.” These responses resulted in y_i being coded as 0 and 1, respectively.

Regression Discontinuity Design: Estimating the Effect of the 1985 Education Reform

Identifying the causal effects of different education systems on educational, economic, and social outcomes is indeed challenging, as there are many factors involved. For instance, age is a potential confounder: it determines what type of education students received (pre- or post-reform), and it correlates with the level of education one has completed, the number of years one has worked, and therefore the amount of income one has earned. Age may also affect preference for national over ethnic interests (as younger people may tend to value diversity and inclusion or vice versa). A RD design minimizes endogeneity by identifying discontinuities at the point where treatment applies (Imbens and Lemieux, 2008; Lee, 2008; Lee and Lemieux, 2010). RD analyses have been widely used in examining the effects of education reforms on student achievement and dropout rates (Guryan, 2001; Jacob and Lefgren, 2004; Oreopoulos, 2006; Ou, 2010), labor market outcomes and earnings (Buscha and Dickson, 2015; Canaan and Mouganie, 2015; Grenet, 2013), and teenage marriage and childbearing rates (Pradhan and Canning, 2016).

As previously mentioned, Kenya’s 1985 education reform took place suddenly and exogenously.² As Kenyans begin their formal education at the age of six and the new academic year begins in January (Glewwe, Kremer, and Moulin, 2009), the implementation of the 1985 reform created a discontinuity at people’s age that determines if an individual begins his or her education under the 8-4-4 system. For example, as the 8-4-4 system was implemented in 1985, the first cohort that started the first year of primary education under the new system would be those who were six years of age as of January 1985 (including those born in January 1979). Those who were born prior to January 1979, however, started their primary education under the 7-4-2-3 system (beginning with an English curriculum). Students born between January 1977 and February 1979 first started their education under the old system during their first or second grade, but switched to the 8-4-4 system beginning in their second or third grade.

Using the potential outcome framework (Hahn, Todd, and Van der Klaauw, 2001; Lee and Lemieux, 2010), the causal quantity of interest in a sharp RD design can be expressed as follows:³

$$\begin{aligned}\tau_{SRD} &= E[Y_i(1) - Y_i(0) | A = c] \\ &= \lim_{\delta \uparrow 0} E[Y_i | A_i = c + \delta] - \lim_{\delta \downarrow 0} E[Y_i | A_i = c + \delta],\end{aligned}$$

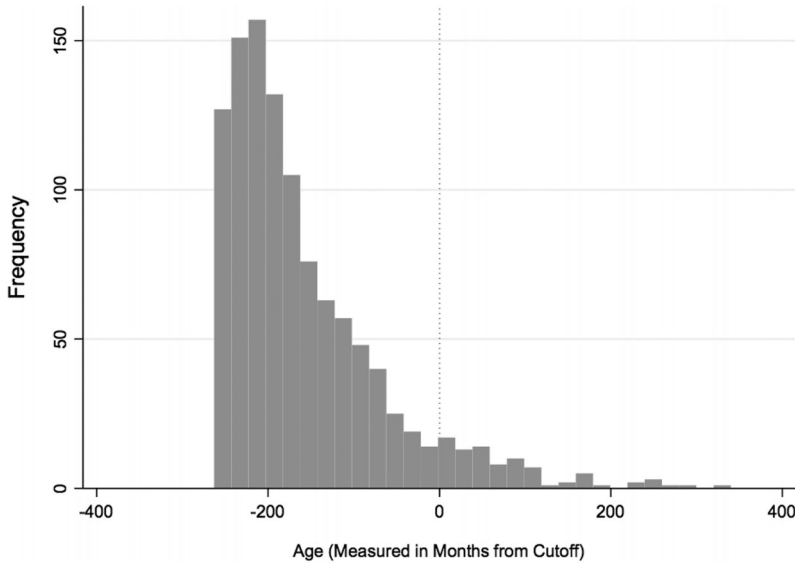
where $Y_i(1)$ and $Y_i(0)$ indicate potential outcomes under the treatment and control conditions, respectively. Y_i is the observed outcome of interest, A_i is the assignment (running) variable (measured by the respondent’s age measured in months from the cutoff point), and c is the cutoff point 0 (indicating a respondent’s birth in January 1979). Following Fan

²For example, scholars such as Amutabi (2003) note that the 1985 reform was politically motivated and lacked preparation or a piloting phase to check the reform’s effectiveness prior to its implementation.

³Note that the treatment and control groups are reversed from a conventional setup because the treatment assignment is given to those who began their education under the 8-4-4 system, who had just turned six as of January 1985 or later, and whose assignment variable has a negative value and hence is left to the cutoff ($A = 0$).

FIGURE 1

Histogram of Assignment Variable



et al. (1996) and Calonico, Cattaneo, and Titiunik, 2014, τ_{SRD} is estimated by using non-parametric, local polynomial regression point estimators.⁴ This estimator approximates an unknown functional form of regression models (Fan et al., 1996; Calonico, Cattaneo, and Titiunik, 2014).

As indicated in the equation above, τ_{SRD} is the quantity measuring the local average treatment effect (LATE), or the effect on those who were born around January 1979, of beginning primary education under the 8-4-4 system as opposed to the 7-4-2-3 system. Although the respondents who were born slightly before January 1979 and those who were born in or slightly after January 1979 are almost identical in terms of their age, a sharp difference is expected in the education system in which they started their education. By focusing only on those who were born almost around the same time but started primary education under two different systems, one may consider the two groups as randomly assigned into these two systems.

Results

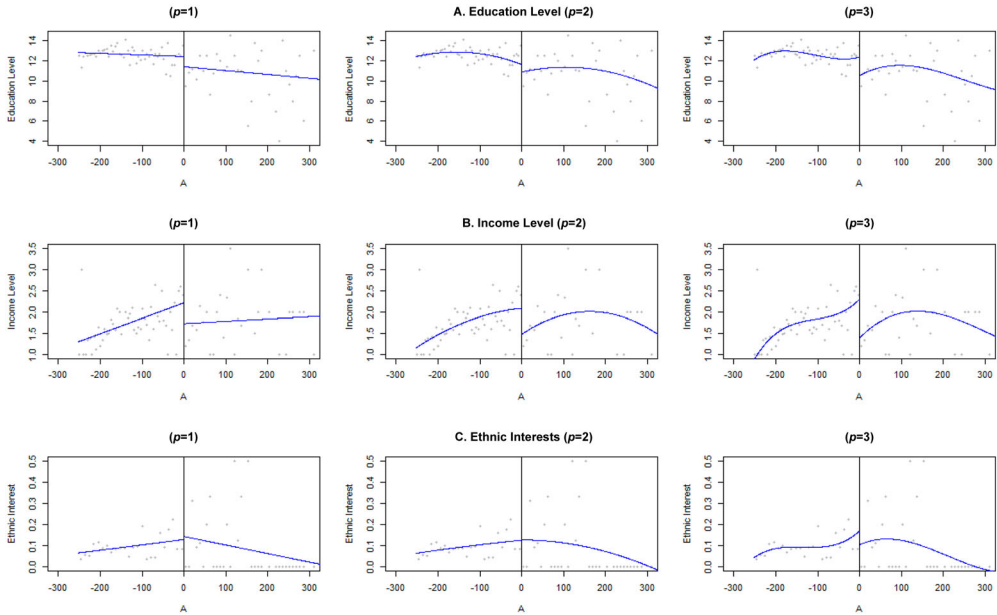
Examining the Discontinuity in the Assignment Variable

Figure 1 presents a histogram of the assignment variable that allows us to examine whether there is clustering on one side of the cutoff. Kenya's population is quite young due to rapid population growth, and the histogram shows a strongly left-skewed population distribution. However, the distribution is relatively smooth around the cutoff, suggesting that there is no sorting into the treatment assignment. Also, considering that the 1985

⁴The following key assumption of an RD model (Lee, 2008; Card, Dobkin and Maestas, 2009) is made: $E[\varepsilon_i | -\delta < A_i < 0] = E[\varepsilon_i | 0 < A_i < \delta]$, where δ is sufficiently small. This assumption indicates that assignment either below or above the cutoff may be treated "as if" random.

FIGURE 2

Binned Plot of Education Level, Income Level, and Ethnic Interests



NOTE: The assignment variable, A , is the respondent's age measured in months from the cutoff point (January 1979, $A = 0$). Children who are below the cutoff began primary education under the new 8-4-4 system (*treatment condition*), while those above the cutoff began under the 7-4-2-3 system (*control condition*).

reform was implemented quite abruptly (Amutabi, 2003), this endogenous sorting is highly unlikely.

Examining the Discontinuity in the Outcome Variables

Figure 2 presents bin plots that include (a) approximation of the local polynomial regression using local sample averages and (b) overall variability of the data, based on the procedure developed by Calonico, Cattaneo, and Titiunik (2015).⁵ The bin plots demonstrate whether there is a jump in the outcome variables at the cutoff or nonlinearity in general. Each of these figures includes four plots, varying by the order of the “global” polynomial (p) that determines the approximation of population conditional mean functions given control and treated units. The horizontal axis in the figures shows age measured in months from January 1979.

In Panel A in Figure 2, each data point indicates the mean education level of respondents whose ages are within the range of the bin. The plot suggests a discontinuity at the cutoff in the assignment variable (age), suggesting that a higher level of education was achieved by those who began their primary education under the 8-4-4 system than was achieved by those born close to January 1979. The jump and the effect size in Figure 2 appear to be

⁵The R package `rdrobust` and `rdplot()` functions are used to generate bin plots and the `rdplot()` function is used to estimate local polynomial Regression discontinuity estimators.

similar regardless of the order of the polynomial. This indicates that the discontinuity's size is quite robust across different functional forms.

Each data point in Panel B in Figure 2 indicates the mean monthly income level of respondents whose ages are within the same bin. Regardless of the order of the polynomial (1–3), the bin plot clearly shows a discontinuity at the cutoff and that, among those born around January 1979, the average income level for those who started their primary education under the 8-4-4 system is higher than the income of those who began their primary education prior to the reform.

Each data point in Panel C of Figure 2 shows the proportion of respondents prioritizing ethnic over national interests. Here, the jump does not seem large, and the direction of the jump varies when the order of the polynomial changes, suggesting no clear impact of starting of education systems on ethnic versus national interests.

The Local Average Treatment Effect of Kenya's 1985 Reform

Table 1 presents the estimation results using the local polynomial regression estimators, following Calonico, Cattaneo, and Titiunik (2015). The point estimates represent the LATEs of starting one's primary education under the 8-4-4 system on the three outcomes of interests for those who were born around January 1979.

Column 1 in Table 1 shows that the LATE estimate for the level of education completed is positive and statistically significant at the 95 percent confidence level regardless of the order of polynomial used. The estimate using a local linear regression ($p = 1$), for example, indicates that for the respondents who were born close to January 1979, those who started primary education under the 8-4-4 system completed 3.3 levels of education higher than those who started their primary education under the 7-4-2-3 system.⁶ This result is consistent with Hypothesis 1.

Similarly, the LATE for income level at an older age of starting primary education under the 8-4-4 system is positive and statistically significant at the 95 percent confidence level using a polynomial of any order (Column 2 in Table 1). The coefficient estimate of local linear regression (i.e., a polynomial of order 1) for the respondents who were born around January 1979 indicates that if respondents started primary education under the 8-4-4 system, their level of monthly income on average would be one level higher⁷ compared to those who started their primary education under the 7-4-2-3 system. This result also confirms Hypothesis 1.

In contrast to the results for education and income levels, the LATE for one's preference between ethnic versus national interests of starting one's education under the 8-4-4 system is not statistically significant at the 95 percent confidence level despite any order of polynomial (Column 3 in Table 1). This result is not consistent with Hypothesis 2.

⁶The median level of education completed for the respondents in this sample is Form 4, indicating high school completion. For a respondent who is at the median level of education, a 3.3-level increase in the level of education completed indicates the attainment of a university degree.

⁷The median level of monthly salary in our sample is the income category between 15,000 and 30,000 Kenyan shillings (KSh) per month, which is approximately 150 to 300 USD. A one-level increase in monthly salary for a respondent whose monthly salary is at the median indicates that she or he is earning between 30,000 and 50,000 KSh per month (300 to 500 USD).

TABLE 1
The Local Polynomial Regression discontinuity (RD) Estimates of the Treatment Effect of Kenya's 1985 Reform

p	(1) Level of Education		(2) Income Level		(3) Ethnic Interest	
	Local Polynomial RD Estimate	h	Local Polynomial RD Estimate	h	Local Polynomial RD Estimate	h
1	3.35 (0.90)**	55.60	1.03 (0.34)**	77.53	-0.00 (0.09)	66.46
2	4.36 (1.22)**	71.59	1.20 (0.41)**	114.35	0.02 (0.09)	84.53
3	4.68 (1.38)**	93.81	1.75 (0.53)**	101.03	0.16 (0.12)	77.78

NOTE: Standard errors appear in parentheses; ** indicates significance at a 99 percent confidence level (two-tailed); p indicates the order of polynomial used in constructing the local polynomial point estimator; h indicates the bandwidth used in constructing the point estimator following the procedures described in Calonico, Cattaneo, and Titiunik (2014, 2015); the forcing variable is the respondent's age measured in months from the cutoff point (January 1979); the dependent variable for the level of education is an indicator for the level of respondent's education completed; the dependent variable for income level is an indicator for the level of respondent's monthly income; and the dependent variable for the probability of ethnic interest is an indicator for the respondent's preference for ethnic versus national interests.

Explaining the Reform's Impact on Education and Income Levels

Although the current research design does not allow identifying which element of the reform (i.e., instruction in a local ethnic language or in prevocational subjects) is a stronger causal mechanism, RD analyses can suggest further evidence. Supplementary Appendix Table 1 presents the LATEs for the reform of students' English proficiency, employment status and type, and measures of educational attainment. The results show that those who were first exposed to the reform as they began primary education, compared to those who already were enrolled in primary school when the reform was introduced in 1985, exhibit a positive and significant LATE for the reform concerning English proficiency and postsecondary education attainment. These results are consistent with previous research that finds positive impacts of being exposed to early instruction in local ethnic languages on later English proficiency (Laitin and Ramachandran, 2016; Seid, 2019) and also with the finding that proficiency in an official language such as English is key for access to education and high-paying jobs (Laitin and Ramachandran, 2015). By contrast, there is no theoretical support that explains how receiving prevocational training in early primary education leads to students' improvement in English proficiency and attainment of postsecondary education. Furthermore, no significant effect was found for unemployment or employment in the business sector. Therefore, combining these results, it seems more likely that change in the language of instruction rather than curriculum changes concerning prevocational subjects was more influential in improving learning outcomes and English proficiency, enabling students to stay longer in school and equipping them for higher-paying jobs.

Discussion and Conclusions

Since its independence in 1963, Kenya has undergone several reforms aimed at promoting national unity, achieving modernization, and reducing unemployment, often yielding none to poor results (Anderson, 1965; Amutabi, 2003; Ojiambo, 2009; Sifuna, 1992).⁸ This study examined the impact of a major educational reform that aimed to provide students with practical, employment-oriented education (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1992). Original survey data collected from Nairobi residents were used in a RD design. This approach compared cohorts of adults who had been exposed to this educational reform at the beginning of their primary schooling to slightly older cohorts who experienced the reform later. This quasi-experimental approach allowed estimation of the LATEs.

Despite estimating only the local effects, the RD design employed in this article has the advantage of offering quasi-experimental findings that can isolate the impact of the reform on the outcomes observed and rule out other potential confounding factors. This approach has been used to identify the positive impact of education reforms in France (Canaan and Mouganie, 2015; Grenet, 2013) and the United Kingdom (Buscha and Dickson, 2015; Grenet, 2013) on labor market participation and earning and on educational attainment (Oreopoulos, 2006).

The article has found the positive LATE of Kenya's 1985 education reform on education and income levels. The level of education completed and the income level are higher for those who began their primary education under the reform than they are for those who

⁸For example, the 8-4-4 system that has existed since 1985 is currently being phased out. The 8-4-4 system is regarded as having failed to provide students with practical skills, thereby failing to address the unemployment problem (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1992). This skepticism regarding the ineffectiveness of the 8-4-4 system has led to the recent reform to gradually replace the 8-4-4 system. Pilot programs began in 2017.

began their education prior to the reform. The result is consistent with other studies in the context of SSA that found a positive impact of education reform on educational and labor market outcomes (Eriksson, 2014). The study, however, does not find any impact on individuals' preferences for ethnic as opposed to national interests among those who were exposed to the reform as they began their primary education. Moreover, by teaching children in local languages, rather than using a common national language such as Swahili, no increase in ethnic interests was observed contrary to the consequences expected by Miguel (2004).

A question that deserves attention concerns what aspects of this education reform improved education and income levels. Given the positive impact of the reform on English proficiency and postsecondary education attainment, it is likely that, albeit imperfect implementation, the instructions in local ethnic languages may have contributed to the positive impact. The reform seems to have helped students' comprehension in other subjects such as English (Laitin and Ramachandran, 2016; Seid, 2019), allowing them to have better access to higher education and higher-paying jobs (Eriksson, 2014; Laitin and Ramachandran, 2015).

Kenya's 1985 education reform has positively impacted the labor market by producing a larger pool of more highly educated individuals who earn more. However, this was not the intention of the reform, which instead aimed at reducing unemployment (Amutabi, 2003; Ojiambo, 2009; Sifuna, 1992). Insofar as the reform had no impact on unemployment, it can be considered unsuccessful. In addition, the positive impact of increased levels of postsecondary education and English proficiency suggests that the reform has provided a more academically oriented education rather than the practically oriented one that had been intended (Sifuna, 1992).

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

TABLE A1. Additional Analyses of the Local Polynomial Regression Discontinuity (RD) Estimation