RISE
RESEARCH ON IMPROVING SYSTEMS OF EDUCATION

INSIGHTS

Spillover Effect of the Nigerian "Free Primary Education" Programme Beyond the Border in Benin

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Key Points

- The RISE Nigeria Team conducted data collection in eastern Benin to test the indirect spillover impacts of Nigeria's Free Primary Education (FPE) programme, a government programme enacted in western Nigeria in 1955, on educational attainment, educational aspiration, and other life outcomes for children of school age at the time of the programme.
- Data shows that residents of eastern Benin were aware of the FPE programme when it was implemented, especially in areas with cultural, geographic, and economic connections to western Nigeria.
- Overall, belonging to villages with economic or cultural connections to Nigeria had no significant correlation with individuals' decisions to pursue either secondary or tertiary sector occupations. However, the data suggests that female subjects in Nigeria-connected villages were more likely to engage in the said sectors. This could possibly be explained by superior educational outcomes related to FPE spillover impacts.
- Female subjects from Nigeria-connected villages gave birth to fewer children on average than those from Beninese villages without economic, social, or geographic connections to Nigeria.
- Individuals with knowledge of the FPE programme are more involved in their children's educational activities than those without knowledge of the programme.

Introduction

Access to primary education for all forms the foundation of the right to education (S. Chandrasekhar and Abhiroop Mukhopadhyay, 2006). It is also clear that the compulsory nature of primary education goes hand in hand with its free provision. Some countries adopted the policy of free primary education very early to guarantee free access to education for all. This is the case, for example, in Nigeria, which introduced free primary education in 1955 through the "Free Primary Education" (FPE) programme, which was implemented in the western part of the country. The FPE programme was introduced in the first budget speech of 1952, after the Action Group (AG) of Chief Obafemi Awolowo came to power. The new government made it clear that education would be its priority, as missionary education and its evangelistic orientation had become inadequate for the needs of a modern economy (Ajayi, 2008).Teaching under this policy took place in Yoruba, which is the predominant local language in this part of Nigeria.

Despite Benin's proximity to Nigeria, it was only recently in 2006 (Afrobarometer, 2018) that Benin began experimenting with its own free primary education policy. Yet this Nigerian policy's spillover effects had already influenced Beninese communities near Nigeria's western border, especially given the connections these communities share with Nigeria in terms of geography, history, and culture. For example, some Beninese citizens may have been influenced by their knowledge of the programme to pursue education. Others attended primary school through the FPE programme in Nigeria themselves.

The RISE Nigeria Country Research Team's (CRT) FPE project seeks to collect data to discern the intergenerational impacts of Nigeria's FPE policy not only on its direct beneficiaries in areas with FPE schools, but also on people of the same generation who experienced spillover impacts, including those in Benin. The team recently conducted data collection in Benin to assess the magnitude of this policy's effect on Beninese communities with geographical, cultural, and/or economic connections to western Nigeria in comparison to communities that do not share any

connection with Nigeria. Since the impact evaluation is meant to measure intergenerational impacts, the surveys also included questions about respondents' attitudes towards sending their own children to school, their involvement in their children's education, their involvement in politics, and other factors.

Full analysis of the data is not yet completed, and the team is still in the process of collecting additional data in Nigeria, including on the FPE's impact on its direct beneficiaries. This insight note seeks to share some background on the project, motivation for measuring spillover impacts of the FPE program in Benin, and early insights from data collection in Benin. An impact estimate of the FPE program will be published in a forthcoming working paper.

Sampling strategy and spillover mechanism

Even if Beninese students did not themselves attend schools in Nigeria as a result of the FPE programme, social connections to these Nigerian communities could still lead to the FPE having an effect on these Beninese students. The main mechanism through which this might occur is increased aspirations, or demand for education—for example, if parents become aware of educational opportunities, this could increase aspirations for their children's education. In this section, we explain our strategy for identifying villages in Benin that were "indirectly treated" by the FPE programme and "control" villages, and how we believe this identification can lead to estimates of the FPE's indirect spillover impacts.

The FPE programme was implemented from 1955-1965 in western Nigeria. Our identification strategy used birth cohorts to identify people who went to school at that time and people who were of schooling age but did not go to school. People born between 1940 and 1960 in areas bordering the western part of Nigeria were considered likely to have been affected by the programme. People born before 1940 were too old to have benefited from the programme even if they were living in areas bordering Nigeria.

In addition to identifying birth cohorts, the research team also used focus group discussions and qualitative interviews within selected villages to identify who within those birth cohorts attended primary school. Moreover, school records in some areas (these were not available in all areas) helped to make a list of students who attended schools in the period of study; the focus groups then helped to identify their peers who did not go to school. Though the vast majority of those who attended school were not direct beneficiaries of the FPE programme (they attended schools in Benin or Nigeria that existed prior to the FPE programme), it is possible that spillover impacts of the programme affected their desire to go to school (or their parents' desire to educate them) through other mechanisms.

Those who were of schooling age from 1955-1965 were surveyed, regardless of whether they themselves attended school. In cases where these respondents were no longer alive, informants provided information on behalf of the deceased subjects. In this research, the informant was chosen very carefully with reference to the approach used by Wantchekon et al. (2015) in their work examining the impacts of missionary schools. The informants were required to be from the deceased subject's generation, have spent considerable time with the deceased subject, and be capable of talking about the subject's life experiences, in this case from school life to adulthood.

In Benin, this study was implemented in the seven municipalities that share a border with Nigeria and speak Yoruba. Those communes include: Ketou, Pobe, Sakete, Ifangni. Adjarra, Ouesse, and Save. Within each commune, villages that are geographically, economically, and/or culturally connected to Nigeria and villages that do not share any connection with Nigeria were selected to represent two treatment arms: (1) "Connected" communities in Benin who might have benefited from the spillover effect of the FPE programme (indirect treatment) and (2) Control communities in Benin, who are not connected to Nigeria and thus were less likely to be impacted by the FPE.

"Connection" is the main variable that characterises our treatment group. We define it as a combination of three elements: 1) The presence of a road or river that connects the Beninese community directly to a Nigerian community, 2) Yoruba being the dominant ethnicity or language spoken in the community, and 3) The presence of markets on both sides of the border that are visited by both communities (Beninese and Nigerian). The idea behind this variable is that those living in connected villages were more likely to be exposed to knowledge of the FPE programme since information flows freely to and from these communities across the border. Social norms within these communities may also have been altered by the FPE programme, leading to changes in attitudes in both Nigeria and Benin.

Data from the project's identification phase seems to confirm the idea that information flows freely across the border between communities with geographical, cultural, or economic connections. Members of Nigeria-connected Beninese communities travel frequently to Nigeria for business or family matters. Members of communities that are not ethnically Yoruba and do not speak Yoruba are less likely to travel to Nigeria because it is difficult for them to communicate and costly to hire an interpreter. Most villages assigned to the control group are not ethnically Yoruba.

The history of the Nigeria-Benin border area also helps to inform the study design. The two countries have long been major trading partners for certain goods such as agricultural products, with ethnically Yoruba traders being heavily involved (Igué and Soule 1992, 100). Intermarriage has not been uncommon, and mutual participation in cultural festivals and religious ceremonies has been an integral part of cross-border communities' relationships (Isyaku, Shuaibu Shittu, 2017).

In fact, Beninese people originally migrated from Aja state of southwestern Nigeria in the 15th century and settled in Abomey and Porto-Novo. These people were originally of Yoruba stock. Rather than reflecting any precolonial social or ethnic differences, the Nigeria-Benin boundary is a legacy of colonial imposition that divided people of the same social and cultural background. In addition to Yoruba, languages such as Gun and Baatonu are spoken on both sides of the border (Isyaku, Shuaibu Shittu, 2017). Gun people of Badagry (Nigeria) and Porto-Novo (Benin) also share common cultural characteristics such as religion, language, socio-political arrangement and even patterns of their settlement. Ethnically Yoruba, Gun, and Bariba communities are found not only in Benin but also in Nigeria. Local markets in the Beninese-Nigerian border area, especially those in Badagry in Nigeria and Porto-Novo, Adjara and Topka (Cotonou) in Benin, have been commonly patronised by all Aja-speaking people regardless of nationality.

We believe that this history presents a natural experiment in which selection into communities in Nigeria directly impacted by the FPE project, indirect treatment communities in Benin ("connected" communities), and control communities in Benin is as good as random. Cogneau et al. (2014) argue that setting a border can create a natural experiment in which, by historical accident, communities with similar backgrounds find themselves randomly assigned to two different groups, one inside the border and the other outside the border. Given the history of the Beninese-Nigerian border, these conditions apply in this case as well. Additionally, the western Nigerian states that implemented the FPE programme likely did not consider impacts on Benin when enacting the policy. Furthermore, connection by road or river, markets, and ethnicity or language is exogenous to the policy under consideration. We therefore believe that living in a Beninese village connected to Nigeria is independent of the FPE policy.

A comparison of control and indirect treatment communities in Benin across educational metrics is presented in table 1 below. A t-test reveals that communities in the indirect treatment group were more likely to have at least one school before the FPE project existed than control communities. That said, the groups are mostly similar across other metrics, and balance checks at the individual level show that individuals from indirect treatment and spillover communities have similar educational outcomes asset holdings, and other socioeconomic characteristics (see table 2).

Table 1 : Balance check at village level between indirect treated and control groups

	(1)		(2)		t-test
	Indirect treated		Control		Difference
Variable	**N**	**Mean**	**N**	**Mean**	**(1)-(2)**
Having at least one a school before FPE	42	0.190	41	0.049	0.142**
Sufficient number of tables and benches in school	42	0.071	41	0.049	0.023
Presence of toilet in school before FPE	42	0.024	41	0.024	-0.001
Presence of sports field in school before FPE	42	0.071	41	0.000	0.071*
Maximum number of classrooms per school in village before FPE	42	0.452	41	0.390	0.062
Having dispensary before FPE	42	0.048	41	0.000	0.048
Having Maternity Hospital before FPE	42	0.024	41	0.000	0.024

*The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.*

Balance checks at the Individual Level

We conducted a balance check at the individual level on variables that might influence the connection of Beninese communities to Nigeria and key outcome variables. We included only the pretreatment variables, or individuals' unique characteristics before the program took place. The two groups appear to be balanced across a wide variety of metrics.

Table 2 : Individual-level balance check

	(1) Indirect treated		(2) Control		Difference
Variable	N	Mean	N	Mean	(1)-(2)
Gender		0.167		0.173	-0.006
Religion muslim		0.093		0.058	0.035
As a child, was there a landline phone in the subject's home?		0.019		0.000	0.019
Nature of the soil of the house as a child: droppings/excrements		0.444		0.500	-0.056
As a child, the main material of the roof: straw		0.833		0.865	-0.032
Nature of the floor of the house as a child: earth/soil		0.537		0.462	0.075
Religion Christian		0.463		0.519	-0.056
Religion traditional		0.389		0.404	-0.015
As a child, was there a radio in the subject's home?		0.278		0.250	0.028
As a child, was there a mirror in the subject's house?		0.426		0.519	-0.093
School status of the subjects		0.426		0.365	0.061
Subject's parent education: Primary education		0.019		0.019	-0.001
Subjects with primary education level		0.370		0.346	0.024
Motivation of parents to send the subject to school: Free school		0.130	19	0.053	0.078
Parents' motivation to send the subject to school: Getting a good job		0.174	19	0.421	-0.247*
Motivation of parents to send the subject to school: Learning a foreign language		0.174	19	0.368	-0.195
Motivation for parents to send the subject to school: Traveling out of the country		0.043	19	0.053	-0.009
Motivation of parents to send the subject to school: Being a great somebody		0.435	19	0.632	-0.197
Motivation of parents to send the subject to school: Having seen someone succeed through school		0.087	19	0.211	-0.124
Motivation for parents to send the subject to school: Serving as a model for others		0.043	19	0.105	-0.062
Motivation to go to school: Parental constraint		0.261	19	0.158	0.103
Motivation to go to school: Existence of tutoring/someone to guide		0.217	19	0.053	0.165
Motivation to go to school: Information on the good character of the people attending the school		0.087	19	0.263	-0.176
Motivation to go to school: good quality of teaching		0.043	19	0.105	-0.062
Subject is regular at school		0.278		0.308	-0.030
Subject has good results at school		0.130		0.115	0.014
Subject's parents want him to have BAC as high degree		0.037		0.058	-0.021
Parents follow up the subjects all the time in learning lesson		0.074		0.096	-0.022

*The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.*

Data Collection Methods and Instruments

We will utilise secondary data and qualitative interviews as well as primary data collected by surveying respondents in eastern Benin in our analysis of the FPE programme.

The team began data collection with an identification phase in which we gathered records of enrollment from schools that existed during the study period to identify students who attended those schools. This enabled the team to conduct a more accurate sampling of students. The team also used data from the national archives and local school districts on (i) primary exam results (disaggregated by gender), (ii) school infrastructure including sports fields, toilets, and libraries and (iii) the number of male and female teachers in the schools through the study years.

As stated previously, qualitative interviews and focus group discussions were used to collect information on subjects who went to school, and those who did not, in the village. The FGDs allowed us to collect important information on the village including presence of a road or river that connects the village directly to Nigeria, presence of markets that are visited by Nigerians, and distance between the village and the closest Nigerian village across the border. These data helped to define both groups (indirect treatment and control), and to ensure the representativeness of the sample and the comparability of the treatment groups vis-à-vis the control groups. Focus group discussions were also used to collect information on the impact of the programme on the overall development of the spillover communities (for example, on their school infrastructure) and the pure control communities.

Percentage of students in our sample

The purpose of this section is to present the proportion of schoolchildren and non-schoolchildren (those who were old enough to go to school at the time of FPE but did not attend) surveyed in Beninese control and indirect treatment villages. Overall, about 53 percent of our sample consists of individuals in the indirect treatment group. Of those individuals surveyed in our sample who attended primary school, 54 percent resided in villages connected to Nigeria.

Table 3 : Students and non-students by treatment status

	Control	Indirect treatment
Non-student	48.15	51.85
Student	45.83	54.17
Overall	47.01	52.99

Knowledge about the FPE programme

Table 4 shows differences between the two groups' knowledge of the Free Primary Education programme. The evidence suggests that knowledge of the programme existed in Benin and was higher in connected villages. This suggests that economic, social, or geographic connections to Nigeria led to increased information flows between cross-border communities. This observation reinforces our categorization of these areas as "indirectly treated."

That said, no rigorous impact assessment has proven this spillover effect. This is one of the main objectives of our study.

Table 4 : Beninese communities' knowledge about the FPE programme

	(1)		(2)		t-test
	Indirect treated		Control		Difference
Variable	N	Mean	N	Mean	(1)-(2)
I know FPE and have participated	788	0.030	699	0.007	0.023***
I know, but I did not participate	788	0.563	699	0.368	0.196***
No, I have no knowledge	788	0.376	699	0.589	-0.214***
*The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.*					

Subjects' motivation for sending their children to school

Subjects chose to send their children to school for several reasons. In the indirect treatment zones, about 46 percent of subjects reported sending their children to school for the purpose of getting a good job. In contrast, individuals in the control group were more likely to be motivated to send their children to school by free schooling policies. This suggests that indirect treatment subjects make more effort to send their children to school than their peers in the control group. Other popular significant motivations within this group to send students to school included motivation towards becoming "a great person". Having seen someone succeed through school is likewise a great motivation for indirect treatment group subjects to educate children.

Table 5 : Subjects' motivation in sending children to school according to treatment status

	(1)		(2)		t-test
	Indirect treated		Control		Difference
Variable	N	Mean	N	Mean	(1)-(2)
Free schooling	665	0.006	600	0.018	-0.012**
Getting a good job	665	0.463	600	0.515	-0.052*
Learning a foreign language	665	0.320	600	0.302	0.019
Travel outside the country	665	0.084	600	0.062	0.023
Being a great person	665	0.756	600	0.703	0.053**
Having seen someone succeed through school	665	0.308	600	0.248	0.060**
Availability of infrastructure	665	0.003	600	0.005	-0.002
Good quality of teaching	665	0.036	600	0.038	-0.002
Motivation of social networks	665	0.005	600	0.002	0.003
Motivation of associations	665	0.006	600	0.005	0.001
Personal motivation	665	0.174	600	0.183	-0.009
*The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.*					

How do subjects in Nigeria-connected villages involve themselves in their children's education according to their knowledge of FPE?

Within the indirect treatment zone, we compared the subject's involvement in their children's education sorted by their FPE knowledge status (Table 6). The programme knowledge status variable is generated based on individuals who responded that they have at least some knowledge of the FPE programme. It is therefore a binary variable that takes the value 1 if the individual has knowledge of the programme and 0 otherwise.

An analysis of Table 6 reveals a significant difference between those with knowledge of FPE and those without

with respect to involvement in children's educational activities. Individuals with knowledge of the FPE programme are personally more involved in following up their children's educational activities at school. Note that we are not suggesting this correlation is causal at this time, but the analysis does show one mechanism through which the FPE in Nigeria could have spillover impacts in Benin.

Table 6: Indirect treated subject's involvement in their children's education by FPE knowledge status

		(1)		(2)	t-test
		I have knowledge about FPE		I have no knowledge	Difference
Variable	N	Mean	N	Mean	(1)-(2)
Provide school supplies for his children but not all time	468	0.171	296	0.196	-0.025
Provide all time school supplies for his children	468	0.656	296	0.642	0.014
Don't follow-up his children in their educational activities	468	0.214	296	0.264	-0.050
Personal follow-up of the children's educational activities	468	0.530	296	0.456	0.074**
Paid a tutor for the reinforcement of the children's level	468	0.100	296	0.132	-0.031

*The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.*

Effect of being in Nigeria-connected villages on occupation choice

In this section, we used logistic regression to assess the link between residing in Nigeria-connected villages and occupation.

All else equal, the results shown in Table 7 suggest that belonging to villages connected to Nigeria has no correlation with individuals' decisions to pursue employment in either secondary or tertiary sector activities. However, when we restricted the analysis to females only, it appears that female subjects in the connected villages are more likely to engage in these sectors, suggesting that educational outcomes are superior in indirect treatment villages.

Table 7: Effect of being in connected villages on occupation choice

	Work in secondary activity sector	Work in tertiary activity sector
Indirect treated zone	-0.194	0.0613
	(0.178)	(0.175)
Female x Indirect treated zone	2.445***	0.687**
	(0.673)	(0.294)
Constant	-1.336***	-1.416***
	(0.126)	(0.130)
Observations	1,331	1,331

*Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

Number of kids per subjects

Table 8 below presents a comparison of the number of children of subjects according to their treatment arms. On average, female subjects who belong to Nigeria-connected villages have fewer children than female subjects that are from control villages. This result is statistically significant at the 5 percent level. This finding aligns with U. Okonkwo Osili et al. (2008), who show a negative causal relationship between female schooling and fertility in Nigeria. For this purpose, they used the Universal Primary Education (UPE) programme implemented in Nigeria. The idea is that the

reform increased girls' education and therefore, women became more equipped to be involved or bargain in fertility decisions (Mason, 1986). Their education could also foster their knowledge about the use of contraceptive methods (Rosenzweig and Schultz, 1989). Additionally, census data (RGH4, Benin) from other regions of Benin (Atacora, Donga, Alibori, Borgou, Zou, Couffo, Mono, Zou) demonstrates patterns consistent with this result—However, the result is not consistent with some of Benin's urban regions (Atlantique and Littoral), possibly because those regions are people from these regions are more educated in general.

Table 8 : Number of kids per subject

	Male					Female				
	(1)		(2)		t-test	(1)		(2)		t-test
	Indirect Treatment		Control			Indirect treatment		Control		
Variable	N	Mean/ SE	N	Mean/ SE	(1)-(2)	N	Mean/ SE	N	Mean/ SE	(1)-(2)
Number of children	587	6.930	528	7.119	-0.189	201	5.313	171	5.854	-0.540**
				[0.194]			[0.177]		[0.195]	
****, **, and * indicate significance at the 1, 5, and 10 percent critical level.*										

Conclusion and Policy implications

We conducted face-to-face surveys of 1,487 subjects from 83 villages in 7 communes of Benin to learn about the spillover effect of the FPE programme implemented in western Nigeria from 1955 to 1965. An initial analysis of the data seems to provide support to our hypothesis that Beninese citizens in villages with social, economic, or geographic connections to Nigeria were more likely to be impacted by the programme. While only 3 percent of respondents in "indirect treatment" villages attended FPE schools, we believe that there may be spillover effects through other mechanisms such as increased aspirations resulting from awareness of the FPE programme (or the benefits of education generally).

Beninese respondents who were of school age during the implementation of the programme and lived in Nigeria-connected areas were more likely to be involved in their children's education. These respondents were also more likely to cite aspirations for their child's future as their motivation to educate their children, suggesting that the FPE programme may have increased levels of aspiration and/or demand for education in Benin's border areas. Female subjects in Nigeria-connected villages also gave birth to fewer children than female subjects from control villages.

An upcoming working paper will examine the FPE programme's impacts on direct treatment, indirect treatment, and pure control groups within Nigeria, and indirect treatment and pure control groups in Benin (the study has five total treatment arms). A final working paper will be posted to the RISE website next year that will provide a more complete analysis of the FPE's intergenerational impacts in Nigeria and eastern Benin.

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