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By Mafang Lionie, Fomba Kamga Benjamin & Tafah Edokat Oki Edward

University of Yaoundé 2-Soa

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Abstract- This paper aims to implement the differences in academic performance between students in the francophone and anglophone education subsystems at primary level in Cameroon. Using data from the Programme d'Analyse des Systèmes Educatifs de la Confemen organised in 2014, the study employs a two-stage modelling approach. Firstly, the estimation of educational production functions by OLS shows that student characteristics and school context are important determinants of students achievement in the anglophone and francophone subsystems. Second, the Oaxaca-Blinder (1973) decomposition method showed that at the end of the primary school year, students in the francophone education subsystem perform better than those in the anglophone subsystem. The share of explained factors contributes to increase this differential to more than 100% in both mathematics and language, therefore, it does not matter how much the unexplained share is given, it does not suggest the existence of discrimination in school performance towards the anglophone subsystem. This calls for policy makers to consider their role in reducing the various sources of inequality among students of all kinds, particularly that focused on the linguistic-educational subsystem.

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I. Introduction

Studies on the comparison of student outcomes are widespread in the field of economics of education. However, research on comparative studies that index the language criterion is more focused on bilingual or multilingual countries. Depending on the level of development, the issue is addressed according to the status of language in the country. Indeed, in developed countries, more specifically in Europe or America, the work discussed compares student outcomes according to ethnicity, community or language region (Sibano & Agasisti, 2013; Edgerton & al., 2008; Vandenberghe, 2011; Tomul, 2009; Hirt, 2008; Ning & al., 2016). One of the issues addressed in this comparison universe is that of examining the factors that contribute to the difference in educational outcomes between students according to any of the above-mentioned comparison criteria.

In the context of developing countries, particularly those in sub-Saharan Africa, most of which have been marked by colonial history, the language of education is a criterion for differentiating pupils. Depending on the language of the colonising country, these countries have adopted foreign languages as a means of teaching and learning in their education systems. A distinction is made between countries that use a foreign language in parallel with a local language as a medium of instruction (the case of most East and West African countries) and countries that use only one or two foreign languages as a medium of instruction. In the light of these different classifications, there are countries with unilingual systems and countries with bilingual education systems.

Cameroon presents a rather particular context insofar as bilingualism refers to the coexistence of two distinct educational subsystems, one French-speaking and the other English-speaking. The Cameroonian education system is therefore the consequence of the dual French and British colonial heritage. Indeed, Cameroon has been under German protectorate since 1884 and the fact that the latter lost the First World War in 1916 led to the retrocession of Cameroon to the two victors of this war, thus causing the splitting of Cameroon into two parts, namely an eastern part, administered by France and a western part, administered by Great Britain. The two powers had very disparate modes of administration and their respective languages (french and english) were used in each of their territories.

After the proclamation of the independence of African countries in the 1960s, Cameroon was obliged to review its educational policy, and this change required both a new orientation in education and a reorganisation of the school system that had been put in place during the colonial era. Following the reunification of 1st October 1961, the country proposed a policy based on bilingualism in an effective way; and it was at this time that the problem of compatibility of the educational subsystems in the country arose.

Author α σ: University of Yaoundé 2-Soa, Faculty of Economics and Management. e-mails: maflionie@yahoo.fr, fomba1@yahoo.fr
Author ρ: University of Bamenda, Faculty of Economics and Management. e-mail: edokat@yahoo.fr

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During all the periods that the form of the state of Cameroon has gone through, starting with the federal period and moving on to the unitary state, the educational structures have been modified to adapt to the different realities of the country. For example, during the federal state, there were two ministries of basic education in the two federated states (French-speaking Cameroon and English-speaking Cameroon), which were headed at the federal administration level by a national ministry of education. Federal law n°63/13 of 16 June 1963, which prefigured the structures of education at that time, regulated primary and secondary education according to more or less different dimensions (e.g. the duration of schooling, its distribution according to cycles as well as the organisation of schooling[1], etc.). This organisation is inspired by past experiences in each state during the colonial period and also reflects the country's desire to preserve the national unity of each linguistic entity. Thus, structural unification with a view to identical primary education for all does not seem to be a priority (Njiale, 2006) insofar as French and English are adopted as languages of instruction.

The proclamation of the unitary state in 1972 thus gave rise to a single education system composed of two education subsystems, one french-speaking and the other English-speaking. In relation to the various commitments that Cameroon has made at the international level through the declaration of the objectives of education for all (universal education for all, reduction of inequalities of all kinds), as well as the objectives of sustainable development, the authorities steering the education sector are directing their actions in terms of educational policy both towards improving the performance or efficiency of its education system and the harmonisation of these funds. Particular emphasis is placed on bilingualism, which is seen here as an optimal instrument for dealing with the dual choice of the Cameroonian education system through the creation of 'bilingual' establishments. However, it is clear that these schools do not follow a common curriculum for all students. On the contrary, the Cameroonian education system is organised around an Anglophone and a Francophone sub-system, each of which has its own specificities that set it apart from the other (Atangana, 2009). Also, the school orientation law of 15 April 1998, which definitively establishes the harmonisation of the two education sub-systems, is quite explicit in its article 15, although it promotes the harmonisation of education cycles at the primary level, it establishes that harmonisation does not strictly mean unification.

Thus, statistics on indicators of school performance between pupils in the two education subsystems suggest differences in performance. For example, if we look at the success rate in the end-of-primary cycle exams, it appears that pupils in the Anglophone education subsystem obtain on average success rates for the First School Certificate (FSLC) that are always higher than the success rate for the Primary School Certificate (CEP) for pupils in the Francophone subsystem (MINEDUB, 2012, 2013, 2014, 2015, 2016). Even though this type of certification is not based on standardised assessment criteria, PASEC statistics that take these elements into account also show a gap in levels of academic achievement between pupils in the Anglophone and Francophone subsystems. Indeed, at the end of schooling, standardised scores on the basis of 100 show that in mathematics, pupils in the francophone subsystem have an overall average score of 49.2 points compared to those in the anglophone subsystem, which was 46.2 points in 2004/2005 (PASEC, 2007). Also, according to the PASEC report (2016), in 2014[2], students in the francophone subsystem had an overall average score in language of 516.96 points compared to 534 points in the anglophone subsystem. In mathematics, although the average scores of students in both subsystems are below the minimum threshold of 500 points, those of the Anglophone subsystem remain higher than those of the Francophone subsystem (498.1 points against 483.80 points).

Despite the considerable attention given to educational achievement, little work has been done to elucidate the factors that explain differences in educational performance along linguistic lines in sub-Saharan Africa in general and in Cameroon in particular. Most of the studies that have been done focus on developed countries. This study therefore aims to fill the gap in the literature concerning the factors that explain the difference in school achievement of pupils at the end of primary school in Cameroon according to another comparison criterion that is less discussed.

The remainder of this paper is organised as follows: section 2 presents the contextual framework of the education system in Cameroon, section 3 reviews the literature, section 4 presents the methodology, section 5 presents the variables and their statistical description, section 6 discusses the results and section 7 concludes.

[1] At primary level, there were two parallel cycles of six and seven years for the Francophone and Anglophone subsystems respectively. The secondary level of general education lasted seven years in both states, but was distributed differently between the cycles. At secondary level, for example, in the Francophone subsystem, the duration of the first and second cycles was 4 years and 3 years respectively. In the Anglophone sub-system, the first cycle lasted 5 years and the second cycle 2 years.

[2] The evaluation standards of the PASEC survey carried out in 2014 were different from those of 2005.

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II. Contextual Framework of the Anglophone and Francophone Education Subsystems in Cameroon in Primary Education: Interferences and Differences

The educational subsystems which, despite the elements of convergence, are also characterised by aspects of divergence. The latter attempt to maintain, rather than diminish over time, both in terms of the organisation of schooling, the duration of teaching, the content of school curricula, teaching practices, etc.

After the ministerial reshuffle of 2002, the Ministry of Basic Education is responsible for the administrative and pedagogical management of public and private primary schools in the two education subsystems at primary and nursery levels. Thus, the State provides funding for public schools, while public schools are financed from the promoter's own funds. The Francophone subsystem is applied in the predominantly Francophone regions, but it should be noted that it is not exclusive, i.e. some schools in these regions also apply the Anglophone subsystem. Similarly, the Anglophone subsystem applies in predominantly Anglophone regions, and is not exempt from the fact that there are some schools that apply the Francophone educational model.

From the point of view of structure, primary education in the two linguistic-educational sub-systems caters for children from 6 to 11 years of age and is divided into three levels, namely level one, which includes the language initiation section (SIL) or Class One, the preparatory course (CP) or Class Two, the second level is also spread over two years and includes the elementary course or Class Three; and the elementary course two or Class Four. The last level includes class five and class six. At the end of primary school, pupils take the Certificat d'Etude Primaire (CEP) for the Francophone subsystem and the First School Living Certificate (FSLC) for the anglophone subsystem.

As far as the curriculum is concerned, the subjects taught are specific to each sub-system and the teaching contents are more or less the same in both educational sub-systems. Table A1 in the appendix shows in detail the school contents of the primary cycle (class CP/class 2) according to the two sub-systems in mathematics.

III. Review of the Literature

Like Hanushek (2002) in his comparative study of private and public school performance, we will ask two basic questions: first, is the academic performance of students in the Anglophone subsystem superior to that of the Francophone subsystem, all other things being equal; second, if so, is this due to the best schools or the best students?

First of all, before knowing the factors that explain the differences in school performance between students of the linguistic-educational subsystems, it would be interesting to first question the literature on the factors of school performance. To this end, there are groups of factors in the literature which explain school performance and which can be grouped into two main groups of factors, namely school-based factors and non-school-based factors. It is from the pioneering work of Coleman et al (1966) that research on the determinants of school performance has been deeply enriched. The authors concluded that factors related to student characteristics are more important in explaining differences in student performance than school-related factors. Also, not all research results from each group of factors are unanimous in their influence on student academic performance.

Apart from research that has aimed to examine the factors traditionally recognised as determinants of school performance, a vast field of comparative education research has developed that aims to compare student performance along specific dimensions, both at the student level (e.g. student gender) and at the school level (public/private), while identifying the contribution of each factor or group of factors in explaining the achievement gap. As regards the language criterion, a limited literature has been developed in bilingual or multilingual countries. In industrialised countries, the education system is highly decentralised, granting management of the education sector to each language community. The languages of schooling are used in the same way as the mother tongues used within the community. In contrast, in developing countries, particularly in Africa, comparative education research focuses on education systems where the criterion for differentiation is the language used in the learning/teaching process. It is in this logic that the performance of students is compared according to the language subsystem in which they are taught.

In countries characterised by linguistic diversity resulting in a multitude of education systems, comparative research on student performance according to linguistic, ethnic or linguistic-educational community membership is not only under-documented, but also not consensual. Indeed, Hirtt (2008), uses school data from Belgium, notably those from PISA in 2006, to see the contribution of both school and non-school factors in explaining the performance differential between students from the two linguistic communities, Flemish and French. The author concludes that although there is a difference in educational outcomes between students of the two language communities, part of the performance differential remains unexplained. The explained part of the difference can be attributed to both school and non-school variables such as social origin, migration, school delays as well as stream dispersion.

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Tood and Wolpin (2003) compared the educational achievements of pupils taking into account the specificities of each ethnicity in terms of Italian, German and French speakers. Their analyses lead to the results that socio-economic and cultural status together explain 60% of the variation in performance between schools, and that headmaster and teacher autonomy explain much of the variation in performance between language communities.

In the same vein, Perelman & al., (2009), following a comparison of Flemish, French-speaking students, find that the factors that contribute to the explanation of performance between students from these three communities are attributable to personal characteristics and family environment. However, much of the unexplained gap persists between students.

Felouzis & al., (2011) show from Belgian data that the most structuring principle of educational inequalities is the socio-economic background of pupils and that these inequalities do not have the same magnitude in each linguistic educational community. Moreover, the differences in average scores between pupils from different language communities are largely related to the age of the pupils. In addition, educational inequalities are strongly correlated with the extent of social segregation in the streams of each language educational community.

IV. Methodology

In line with the work of Meunier (2005), this paper uses in a first step the educational production function to estimate students' test scores in mathematics and language. This model postulates that a student's performance i is dependent on a set of factors and can be formalised as follows:

$$S_i = \beta X_i + \varepsilon_i \quad (1)$$

Where S_i is the student's average score and X_i is the set of variables that affect the student's test score. It includes two types of variables, namely the variable of interest, which is a binary variable reflecting the choice of the linguistic-educational subsystem, and the set of control variables relating to the characteristics of the student and his/her family, as well as those relating to the characteristics of the school and those of the community. ε_i represents the error term.

If we wish to test the hypothesis that the two linguistic-educational subsystems are assessed differently, it is necessary to make separate estimates of equation (1) for each group, i.e. one for the anglophone subsystem and another for the francophone subsystem. The performance equation for students in the Francophone subsystem is therefore one, and the performance equation for students in the Anglophone subsystem is another, and is formulated as follows:

$$\begin{cases} S_i^F = X_i^F \beta^F + \varepsilon^F & (2) \\ S_i^A = X_i^A \beta^A + \varepsilon^A & (3) \end{cases}$$

Where the exponents F and A represent the Francophone and Anglophone subsystems respectively. By estimating equations (2) and (3) by the ordinary least squares method, it is possible to identify the determinants of students' academic performance for each linguistic-educational subsystem.

a) Decomposition of the academic achievement gap between students: Oaxaca and Blinder's method (1973)

In a first step, the Oaxaca-Blinder (1973) decomposition technique is used to examine the educational achievement differential between the two groups (Francophone and Anglophone subsystems). Although this method is much more popular in the field of the labour market with wage differentials by gender or race, this technique has been little studied in the field of the economics of education. In this article we will examine this language-based educational outcome differential that is attributable to the educational subsystem.

After having determined for each educational subsystem the explanatory factors of the pupils' school performance, the current question will be to know what are the explanatory factors of this gap, so the formalisation is such that :

$$R = E\left(S^F\right) - E\left(S^A\right) \quad (4)$$

Where R is the difference in estimated score means between each group, accounted for from the predicted variables of the different groups from the linear models (2) and (3). To determine the contribution of group differences in predicted values to the total difference in scores from equation (4) as

$$R = \left[E\left(X^F\right) - E\left(X^A\right)\right]' \beta^F + E\left(X^F\right)' \left(\beta^F - \beta^A\right) + \left[E\left(X^F\right) - E\left(X^A\right)\right]' \left(\beta^F - \beta^A\right) \quad (5)$$

Where β^F and β^A are estimated parameters obtained from the previously specified test score equations. $E\left(X^F\right)$ and $E\left(X^A\right)$ are the average characteristics of groups F and A.

This equation corresponds to the three-term decomposition equation. The first term measures the share of the observed test score gap attributable to the difference between the characteristics and the second term is the contribution to the observed score gap

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attributable to the differences in the performance of the characteristics

The Blinder-Oaxaca (1973) decomposition technique will be used to decompose student test scores by educational subsystem. Indeed, it is one of many techniques used to study labour market outcomes by groups (e.g. by gender, race and educational level). Although most applications of this method are in the labour market, the technique has also been explored in other areas such as the economics of education. Group 1 of the study will include students from the English-speaking education subsystem and group 2 is composed of students from the French-speaking education subsystem. The variables used in the equation for this decomposition are the variables previously presented.

V. Data and Variables

a) Data source

The data for this study come from the survey of the Programme d'Analyse des Systèmes Educatifs de la Confemen (PASEC), which aims to evaluate the performance of education systems in French-speaking sub-Saharan African countries, by testing the skills of primary school pupils in two areas, language and mathematics (PASEC, 2016). This programme covers ten sub-Saharan African countries including Benin, Burundi, Burkina Faso, Cameroon, Chad, Congo, Cote d'Ivoire, Gabon, Senegal, Togo and the Central African Republic. To obtain quality data for each country, PASEC uses a two-stage stratified sampling strategy for schools and then for students. In the first stratum and based on the school mapping data for each country, schools with primary school pupils are sampled with a probability proportional to the number of eligible pupils. In the second stage, i.e. the second stratification stage, according to the grades, pupils are selected with equal probabilities from each school. In the second year, for schools with at least 10 pupils, all pupils are selected.

In addition, PASEC collects information on the characteristics of pupils, teachers, classes and schools, which makes it possible to assess the level of distribution of resources, to understand school practices and to relate them to the performance of pupils. It should be noted that the calculation of the scores, an indicator for measuring student performance, followed a different methodology from previous surveys (1996, 2004), in order to comply with other international programmes such as PISA. This survey implements a new methodology called "plausible values[3]" in the calculation of scores. The interpretation of scores was facilitated by the introduction of competency scales of scores by reporting students' results on a scale with a mean of 500 and a standard deviation of 100. In the end, a total of 280 schools with 10 or more students per school were selected in each country.

In Cameroon, based on a sample of schools and pupils in the Francophone and Anglophone education subsystems during the 2014/2015 school year, nearly 140 schools were surveyed in grade 2 and 180 schools were surveyed in grade 6 , and tests in French and English (i.e., the two languages of instruction) and mathematics were administered to a maximum of 10 and 20 pupils per primary school class for grades 2 and 6 respectively.

In the end, in 2nd year, the survey resulted in a total of 1071 pupils in 134 schools. In the Francophone system, there were 614 pupils in 84 schools and in the Anglophone subsystem, there were 457 pupils in 50 schools. In 6th year, the survey led to a total of 3817 pupils in 266 schools, of which 167 schools and 2186 pupils were in the Francophone subsystem; 99 schools and 1631 pupils in the Anglophone subsystem. After removing the missing observations from the database, we were left with a total sample of 3817 pupils, of which 1465 pupils for the anglophone subsystem and 2021 pupils for the francophone subsystem.

b) Variables and descriptive statistics

The variables used in this article are of two types, namely the explanatory variables and the dependent variable. The choice of variables is inspired by the work of Ning & al., (2016) and Thapa (2015). The dependent variable corresponds to the student's level of acquisition captured by the standardized score of the students' tests in language and mathematics measured at the end of the year (6th year). Indeed, in order to be in line with international standards, recent surveys have implemented the notion of plausible values for each student, but in the framework of this work, the scores will be captured by generating the averages of these five plausible values scores. In the end, we will have two dependent variables, namely, one in language and one in mathematics.

The comparison of the average levels of pupil acquisition according to the francophone and anglophone subsystems will be explained according to a set of explanatory variables classified into individual and family characteristics of the child, school characteristics (class/school) and geographical characteristics. As personal characteristics of the student, gender is taken into account insofar as families have more ambition for boys than for girls and this gender differentiation in developing countries is due to

[3] They were drawn for each subdomain of the different subjects (language and mathematics). Based on the students' scores, the difficulty of the items and the ability of the students were calculated simultaneously using a method called the Rasch model or item response model. As only an incomplete item subsample is administered, scores were calculated with relative uncertainty. For this reason, PASEC did not provide a single estimate of student performance, but five plausible values for each of the subjects (language and mathematics), which represent the different abilities a student might have. For more details see Wu (2005).

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socio-cultural considerations (Kantabaze, 2010), which consequently predisposes boys to obtain better scores than girls. To this end, a positive sign is expected. Age is also important, as it has been shown in the literature that the delay in schooling, caused by late entry to school, could be attributed to a greater maturity of older pupils compared to younger ones (Schwille, 1991). Pre-school attendance guarantees a better continuation of primary schooling and therefore improves the child's school performance. A positive sign would be expected. Repetition is a factor in poor performance and pupil progression. A positive sign is expected.

As regards characteristics related to the child's family environment, having at least one literate parent makes it easier for pupils to do their homework (Meunier, 2005). A positive sign is also expected. The standard of living of a household can provide the pupil with a favourable environment for learning at home in view of the different resources that the household provides.

Variables specific to school characteristics such as the teacher's level of education are important in that teachers who have not attained a certain level of education or training will find it difficult to make progress with their students (Thapa, 2015). Also, that Class size is justified by the fact that small classes are easier to manage and more suitable for students (Verspoor, 2005). The age of the teacher is explained by the fact that older teachers have more experience in pedagogy and teaching practices than younger ones (Verspoor, 2005).

Teachers who have more experience in terms of years of teaching have good techniques to impart knowledge to their students, so a positive sign is expected (Chowa et al., 2015). The level of equipment in the classroom is a predictor of the student's level of academic performance. The type of school is ultimate for this work because public schools are characterised by school conditions (better resources in terms of multiform school equipment) that predispose the student to better learning than public schools (Thapa, 2015).

Finally, children who attend schools in urban areas have all the necessary equipment to support their learning, compared to pupils in rural areas, so a positive sign would be expected (Mourji & Abbaia, 2013).

Table 1 below shows the statistics for these variables by language use subsystem.

The analyses in Table 1 show that the average age of students in the francophone subsystem is higher than in the anglophone subsystem (i.e. 12 years, compared to 11 years). Also, there are more girls than boys in the anglophone subsystem. In addition, our sample shows that more than half of the students in the francophone subsystem are exposed to repetition, compared to 46.41% for their anglophone counterpart. Also, 55.69% of students in the anglophone subsystem attended preschool and 44.08% did so in the Francophone subsystem.

With regard to variables related to the family environment, the statistics show that most children in the anglophone subsystem come from households with a medium standard of living (51.60%), while 49.48% of children live in a family with a comparable standard of living.

Table 1: Description of variables by educational subsystem.

Independent variables	Education subsystem	
	Anglophone	Francophone
Student characteristics		
Student age (in years)	11.46 (1.33)	12.25 (1.6865)
Boy	0.5037 (0.0130)	0.5398 (0.0110)
Preschool	0.5569 (0.0129)	0.4408 (0.0110)
Repetition	0.4641 (0.0130)	0 .5650 (0.0110)
Low socio-economic level of the household	0.1679 (0.0097)	0.3275 (0.0104)
Socio-economic level of the average household	0.5160 (0.0130)	0.4948 (0.0111)
High socio-economic level of the household	0.3160 (0.0121)	0.1776 (0.0085)
Parent literacy	0.7799 (0.0124)	0.8011 (0.0091)
School characteristics		
Age of teacher (in years)	38.92 (7.2497)	38.85 (7.5958)
Gender of teacher (ref. male)	0.6539 (0.0124)	0.8055 (0.0088)
Experience of the teacher (in years)	11.07 (7.5117)	11.20 (7.8443)
Diploma at least equal to the baccalaureate	0.7529 (0.0112)	0.5200 (0.0111)
Vocational training of teacher	0.8873 (0.0082)	0.7699 (0.0093)
Low level of equipment in the class	0.2327 (0.0110)	0.2038 (0.0089)
Middle level of equipment in class	0.4621 (0.0130)	0.5398 (0.0110)

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High level of equipment in the class	0.3051 (0.0120)	0.2563 (0.0097)
Private school	0.4614 (0.0130)	0.3102 (0.0102)
School location (ref. urban area)	0.4204 (0.0129)	0.3285 (0.0104)
Number of observations	1465	2021

Source: Authors, based on PASEC 2014 data. Note: standard deviations in parenthesis.

With regard to the variables relating to school characteristics, the analyses show that in both the anglophone and francophone subsystems, the average age of teachers is 38 years. In addition, the proportion of male teachers is higher in the francophone subsystem than in the anglophone subsystem (80.55% for the francophone subsystem and 65.39% for the anglophone subsystem). 75.29% of teachers have at least a baccalaureate degree in the anglophone subsystem compared to 52% in the francophone subsystem. The statistics further show that less than half of the schools are private, but that there are more public schools in the anglophone subsystem than in the francophone. Also, more schools in the anglophone subsystem are located in urban areas than in the francophone subsystem (38.85%).

VI. Econometric Results

The first section will focus on the results of the estimation of the academic performance of students in each of the educational subsystems and the second section will present the results of the decomposition of the academic performance gap.

a) Results of the estimation of students achievements in the francophone and anglophone sub-systems

Although this is not the focus of this article, it is interesting to identify in advance the factors that contribute to students' academic performance in each subsystem. Table 2 summarises these results for mathematics (columns 1 and 2) and language (columns 3 and 4).

➢ In mathematics

The results in columns (1) and (2) of this table show that most of the variables show expected signs and are relevant to explain the academic performance of students in mathematics for both the anglophone and francophone education subsystems. With regard to the individual characteristics of the child, the related factors explain to different degrees the level of school performance of the child according to the school attendance sub-system. Specifically, increasing age decreases with the student's end-of-year mathematics score, but significantly so at the one percent threshold in the francophone education subsystem. Compared to girls, being a boy increases the mathematics score by 11.9% in the francophone subsystem; the effect of gender is nul when attending the anglophone subsystem.

Analyses of the same table also show that characteristics related to the student's family characteristics contribute to the academic performance of students in the francophone and Anglophone subsystems. However, this category of factors contributes more to student performance in mathematics in the Francophone subsystem than in the anglophone subsystem. In particular, compared to students from families with a low standard of living, children from households with a low standard of living saw their performance decrease by 42.3% and 28.8% respectively in the anglophone and francophone subsystems. Also, in both the anglophone and francophone sub-systems, academic performance increases by 12.8% and 17.7% respectively when they live in a household with a high standard of living.

With regard to the characteristics specific to school conditions, the table reveals that a class taught by a teacher who has at least a baccalaureate increases the academic success of pupils by 27.3% and 20.9% in the Anglophone and Francophone subsystems respectively. While the teacher's professional training has no effect on the level of student achievement in the Anglophone subsystem, it is associated with an academic performance advantage for students in the francophone subsystem and increases the latter's level of achievement by 27.8%. Also, a classroom with a low level of equipment significantly decreases the child's academic performance only in the francophone subsystem. However, when the classroom is equipped with a high level of equipment, it increases students academic success in both systems, by 14.3% in the anglophone subsystem and up to 23.9% in the francophone subsystem. Compared to public schools, private schools in the francophone subsystem perform better than those in the anglophone subsystem, increasing student performance in mathematics by 30.1%. Compared to schools located in rural areas, schools located in urban areas increase student performance in mathematics by 56.6% and 72.5% in the anglophone and francophone subsystems respectively.

➢ In language

Columns (3) and (4) of table 3 highlight the results of the OLS estimation of school performance by language education sub-system. It appears that student characteristics and household environment, school conditions influence the academic achievement of students in the educational subsystems. In relation to the characteristics of the pupil and his or her family environment, the results for the Anglophone subsystem show that factors such as age, sex of the pupil, low household standard of living and high household standard of living play a major role in the success of

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children at the end of the primary language cycle. While among these variables, pre-school attendance and having a literate parent, low household standard of living and high household standard of living are the variables with more weight in determining students' test scores in language. For example, the standard of living in both the anglophone and francophone subsystems has an important influence on the language achievement of children, but this effect is more important for students who attend school in the anglophone subsystem, insofar as for a student attending school in the anglophone subsystem, the language score increases by 25.6% when he or she lives in a household with good living conditions and by 14.3% for a student attending school in the francophone subsystem.

Concerning the characteristics of the school, it appears that the academic performance of the students in language in the french-speaking subsystem is more explained by this group of variables, compared to the English-speaking subsystem. Indeed, in the anglophone subsystem, all the variables show expected signs except for the teacher's professional training. Pupils taught by a teacher with at least a bachelor's degree have school performance premiums of 16.1% and 23.7% in the anglophone and francophone subsystems respectively. Also, compared to a pupil living in a low-income household, the school performance of a child in a language increases by 12.4% in the anglophone subsystem and by 10.5% in the francophone subsystem. Vocational training has a differentiated effect on the level of student achievement depending on the subsystem. While it significantly reduces the test score by 11.9% in the anglophone subsystem, it increases the same score by 18.9% in the Francophone education system. In terms of geographical or community characteristics, the academic performance of students attending schools in urban areas increases by 55.8% and 73.4% in the anglophone and francophone subsystems respectively.

b) Results of the decomposition of student achievement gaps

The aim here is to identify the factors that explain the difference in children's school performance according to whether they belong to the Anglophone or Francophone education system in mathematics and language. The results obtained from the decomposition are summarised in Table 3. Since not all variables are significant, it seems appropriate to limit the analysis only to those variables that are significantly different.

Table 2: Estimates of the determinants of students' school performance according to the anglophone and francophone subsystems

	Mathematics		Language	
	(1)	(2)	(3)	(4)
Variables	Anglophone	Francophone	Anglophone	Francophone
Students Characteristics				
Age of the student	-0.0583	-0.196*	-0.294**	-0.101
	(0.137)	(0.114)	(0.122)	(0.107)
Age of the student^2 /100	-0.238	0.396	0.621	-0.00664
	(0.568)	(0.446)	(0.500)	(0.421)
Gender of the student	-0.0339	0.119***	-0.109***	-0.0102
	(0.0404)	(0.0346)	(0.0393)	(0.0325)
Pre-school attendance	-0.0620	0.136***	0.0234	0.177***
	(0.0434)	(0.0417)	(0.0427)	(0.0391)
Low household standard of living	-0.423***	-0.288***	-0.445***	-0.265***
	(0.0561)	(0.0428)	(0.0550)	(0.0413)
High household standard of living	0.128***	0.177***	0.256***	0.143***
	(0.0477)	(0.0524)	(0.0467)	(0.0473)
Literacy of parents	-0.0182	0.0583	-0.0231	0.202***
	(0.0476)	(0.0472)	(0.0468)	(0.0455)
Schools Characteristics				
Gender of the teacher	-0.0659	-0.0641	-0.0759	-0.145***
	(0.0467)	(0.0517)	(0.0470)	(0.0464)
Diploma at least equal to the bacc	0.273***	0.209***	0.161***	0.237***
	(0.0539)	(0.0386)	(0.0566)	(0.0358)
Professional training of teacer	-0.299***	0.278***	-0.119*	0.189***
	(0.0671)	(0.0619)	(0.0654)	(0.0592)
Professional experience of the teacher	-0.00231	-0.00356	-0.00500	-0.00222
	(0.00323)	(0.00248)	(0.00308)	(0.00235)
Equipment level low class	-0.0415	-0.113**	0.0101	-0.177***
	(0.0521)	(0.0494)	(0.0519)	(0.0472)

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High class equipment level	0.143***	0.239***	0.124**	0.105**
	(0.0510)	(0.0456)	(0.0486)	(0.0416)
Private school	0.0664	0.301***	0.00297	0.300***
	(0.0491)	(0.0626)	(0.0488)	(0.0597)
Urban school	0.566***	0.725***	0.558***	0.734***
	(0.0484)	(0.0509)	(0.0490)	(0.0474)
Constant	1.007	1.018	2.524***	0.536
	(0.829)	(0.736)	(0.750)	(0.693)
Sample	1,465	2,041	1,465	2,041
R-squared	0.347	0.449	0.378	0.512

*Source: Authors, based on PASEC 2014 data. Standard deviations are in brackets. *** p<0.01, ** p<0.05, * p<0.1*

➢ In mathematics

For pupils at the end of the primary school year, the analysis of the difference in language average between pupils in the French and English sub-systems reveals that observable factors increase the gap in school performance while unobservable factors reduce this gap. Thus, the share explained by observable factors is more than 100% (166.86%). If we go into the details of the decomposition, it emerges from the table that it is the variables specific to the characteristics linked to the family environment and to school conditions that are at the origin of this explained difference. For example, the low and high standard of living of the household, the fact that the teacher is male, the level of education and the low level of equipment in the classroom exacerbate the differences in school performance between the anglophone and francophone subsystems. On the other hand, the professional training of the teacher helps to reduce this difference.

Looking at the unexplained share, it appears that all groups of variables influence the unexplained gap. Specifically, the fact that a pupil is a boy, pre-school attendance, low household standard of living, the teacher's professional training, the school's home network, and the school's location all contribute to the narrowing of the performance or achievement gap between pupils in the two subsystems in Cameroon.

➢ In language

In contrast to the academic performance gap that may exist between primary school leavers in mathematics, the language gap is larger between students in the anglophone and francophone subsystems. The results of the Oaxaca and Blinder decomposition show that more than 100% of the gap can be attributed to explained factors. While the unobservable part, due to discrimination, reduces this difference. In more detail, the age of the child, the low and high household standard of living, the level of education, the high level of classroom equipment and the location of the school increase the school achievement gap and vocational training reduces the school achievement gap. On the unexplained side, the results in the table show that gender, pre-school attendance, low household standard of living, having at least one literate parent, type of school and school location further widen the gap in school performance between the two groups.

Table 3: Oaxaca and Blinder decomposition

	(1)	(2)
Variables	Mathematics	Language
Francophone subsystem	0.0982***	0.109***
	(0.0235)	(0.0243)
Anglophone subsystem	-0.0673***	-0.0758***
	(0.0208)	(0.0207)
difference	0.166***	0.185***
	(0.0270)	(0.0343)
Difference explained	0.277***	0.313***
	166.867%	169.189%
	(0.0345)	(0.0355)
Unexplained difference	-0.111***	-0.128***
	-66.867%	-69.189%
	(0.0373)	(0.0332)
Sample	3506	3506

*Source: Authors, based on PASEC 2014 data. Standard deviations in brackets. *** p<0.01, ** p<0.05, * p<0.1.*

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VII. Conclusion

The reunification of Cameroon in 1961 brought about profound reforms within its school system, the most striking of which is the organisation of the latter according to two educational subsystems which coexist despite their specificities. Attempts to harmonise these two educational subsystems have always ended in failure, and this has had repercussions on the performance of the education system in general and on pupils in particular. In this context, this article has set out to compare the academic performance of students in the francophone and anglophone education subsystems and to identify the factors that may explain this gap in academic performance.

Using data from Programme d'Analyse des Systèmes Educatifs de la Confemen (PASEC 2014), the two-step econometric strategy first shed light on the factors that determine students school performance according to language attendance subsystems; and secondly, decompose the school performance gap using the Oaxaca and Blinder (1973) decomposition method.

With regard to the estimation of the educational production function, the results show that at the end of primary schooling in mathematics, the environmental characteristics of the household in which the child lives, and the school conditions are both considered to be more important factors in determining the academic performance of pupils in Cameroon in mathematics.

Subsequently, the decomposition of the difference in school performance made it possible to identify the factors that are responsible for this gap. The results showed that more than 100% of this gap is due to observable factors attributable to both the out-of-school and in-school environment, notably, the household's standard of living, the teacher's level of education, vocational training and the level of equipment in the classroom, for mathematics. For language performance, these same factors explain the differential explained in addition to age and location of the school.

Policy recommendations can be made to education policy makers on the basis of the results obtained. Emphasise the policy of distributing school equipment both at the level of classes and at the level of geographical areas of schools by providing schools in rural areas with various forms of school support to guarantee a favourable school learning environment for pupils. Also, strategies to fight inequalities must be based on the policy of improving the living conditions of households. For example, by providing support to households that live in poorer conditions. In order to reduce socio-economic inequalities between pupils according to the socio-economic status of the household.

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Annex 1: Curriculum content in mathematics by learning area for grade 2 (CP/Class 2)

Francophone subsystem	Anglophone sub-system
CP	Class 2
– *Preliminaries:* Comparison of quantities (more than...than and as many...as; etc.) – *Numbers and Numeration:* Numbers from 10 to 20; ordering numbers (ascending and descending); – *Operation:* Practice of addition and subtraction (with and without a carry) and multiplication operations, numerical operators, mental calculations; etc. – *Measurement:* Telling the time of day and half-hour; use of the calendar; comparison of quantities (length, mass and time measurements) – *Geometry:* Identification of simple geometric solids; the square, the rectangle, the triangle; the circle; folding, overlapping, moving, superimposing; etc. – *Problems:* Problems involving the sum of one or more numbers (result less than 100) or the difference of two numbers; problems involving a quantity; activities related to rhythm and periodicity.	– *Preliminary:* Review of the previous class (class one) – *Numbers and Numeration:* Counting, reading and writing numbers from 0-100: decomposing numbers from hundreds, tens and units; comparing numbers (with symbols .....); etc. – *Operation:* Practice of addition and subtraction operations (with and without a carry); recognition and illustration of the commutative properties of addition and multiplication; division without remainder of numbers less than 100 by 2, 5 and 10; etc. – *Measurement:* Drawing and labelling of the clock; use of the calendar; recognition and use of coins under 100fr; use of quantities (length, capacity and mass measurements) – *Geometry:* Identification of geometric figures (circle, square, rectangle, triangle) – *Problems:* Formulate real-life problems in mathematical form; problems involving addition, subtraction, multiplication and division – *Logic and Sets:* Use of 'union' and 'inter' symbols to combine two sets; identify common objects in two sets – *Graphs and Statistics:* Locating points on the line in relation to the reference point; drawing line segments to scale; etc.

Source: Authors, based on official primary school curricula/national syllabuses for English speaking primary schools in Cameroon, MINEDUB, 2014.

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