Higher Education in Africa: Survey and assessment

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Abstract. The aim of this article is to examine and assess Africa's higher education effort. The theoretical framework employed distinguishes between three dimensions of the higher education project: the quantitative dimension (measured in terms of higher education enrollments and enrollment ratios), the qualitative dimension, and the equality dimension. After the political and economic context of Africa as well as the historical evolution of higher education in Africa are sketched, higher education in Africa is analyzed and evaluated in terms of each of the three dimensions of quantity, quality, and equality. The development of national higher education systems really only began after the advent of independence in 1960, moved painstakingly slowly and even stagnated until the 1990s, when higher education in Africa lags behind the rest of the world, the growth in enrollments since 1990 is encouraging, and the current economic boom and political pacification of the continent bode well for the evolution of higher education in coming years and decades.

Keywords: Africa, quality, equality, enrollment growth, higher education enrollment ratio, ranking of universities, student-staff ratio, higher education expenditure, physical infrastructure of higher education institutions

1. Introduction

Higher education is a rapidly developing sector in Africa, and given the weight that Africa's population and landmass represent in the world, in an age of globalization and a flat world (a world where the ease of communication and travel has wiped out any geographical advantage), developments regarding higher education in Africa is worth being watching by the world at large. The aim of this article is to examine and to assess Africa's higher education effort. It begins with the exposition of the theoretical framework which is used to survey and to assess higher education in

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Africa. That will be followed by an outline of the African context and by a depiction of its historical evolution of higher education. The different dimensions of higher education in Africa are then assessed.

2. Theoretical framework

The African higher education project is evaluated along three dimensions. The first is a *quantitative* one that entails participation in education. However, to expand (to increase quantity of education provision) a poor quality education to everyone is a worthless exercise. A second dimension is therefore *quality*. Education quality is a concept that defies an easy, one-line definition. Rather than attempting to define it, Bergman (1996) contended that it is more meaningful to enumerate the components of education quality. The following four elements of education quality, based on Bergman's model, will be used in this article:

- *Input quality*: input quality refers to the quality of financial and physical (physical facilities and infrastructure) input.
- Process quality: this is the quality of teaching and learning taking place in the education project.
- *Output quality*: this is the outcome of the learning process, the achievement levels of learners at the end of the education process.
- *Product quality*: product quality refers to the effect of education or the impact thereof which the graduated product makes. One commonly used measure of this is, for example, to calculate the rates of return to education.

In the second half of the twentieth century, *equality*, in the form of *equal education opportunities* came to the fore as a dominant motive for the expansion of education worldwide (*cf.* Wolhuter, 1993). The value of aggregate values or averages – indicating a high quality of education – becomes restricted when such values are determined by a numerically small elite. Indices of quality should, therefore, be qualified by a third dimension, namely – measures of equality. Equal education opportunities are similarly a concept that is difficult to encapsulate in a single definition; and no consensus exists as to what exactly is meant by it (*cf.* Wolhuter, 1993, pp.68-95).

However, a model of equal education opportunities, which is widely accepted in Comparative Education, is that of Farrell. Farrell (1982) distinguished between four facets of equality:

- *Equality of access*: the statistical chances that learners from various social categories could enter the school system.
- *Equality of survival*: the statistical chances that learners from various social categories would reach a particular level in the school system (*e.g.* the last year of secondary school).
- *Equality of output*: the statistical chances that learners from various social categories would achieve the same outcomes (*e.g.* pass the matriculation examination).

• *Equality of product*: the statistical chances that learners from various social categories with the same educational qualifications would be able to obtain the same jobs, incomes, and life chances.

The main forms of inequality in education worldwide are gender, socio-economic strata, race/ethnicity, rural-urban, and geography (the core-periphery being the most prominent form of inequality with respect to geography) (*cf.* Wolhuter, 1993).

3. Africa: Contextual background

Most African states attained independence, and came into being in the few years around 1960 According to Tordoff (1997, pp.1-2), these states had the following in common. They were:

- all ex-colonial states;
- searching for a new identity as nation-states;
- economically underdeveloped, predominantly rural and largely dependent on the vagaries of the world market; and
- militarily and politically overpowered by the developed states of the First World, and had unsettled political cultures and weak institutions.

In the last quarter of the nineteenth century Africa was divided into 50 colonies by European powers (Britain, France, Portugal, Spain, Belgium, Germany), the Berlin Conference of November 16, 1885 – January 31, 1886 being, in this regard, a significant event. This action was the basis of the contemporary political map of Africa with its 53 states. After having been ruled as colonies by European powers for three quarters of a century, these colonies became independent states around 1960.

The division of Africa into 50 odd political entities by the colonial powers was done arbitrarily or at best to suit European interests, with scant regard for ethnic, cultural, linguistic, political, social and economic borderlines and interests in Africa. Among the first tasks the leaders of the newly independent states had that of welding nations, of forging national unity, and a sense of national identity among the people who lived within the borders of these states. Education was commonly used by these leaders as an instrument to forge national unity to create a sense of nationhood and as a means of legitimizing these new governments which attempted to be seen as supplying the great social demand for education) (*cf.* Wolhuter & Van Niekerk, 2010).

The African states began their status of independent states as poor, economically undeveloped, or underdeveloped. A popular explanation for this state of affairs is dependency theories that underdevelopment is the result of colonialism and continuing neo-colonialism (Chazan, Mortimer, Ravenhill & Rothchild, 1999). Yet this might well be, at best, part of the explanation. Sandbrook (1985, p.27) criticizes, what he calls "simplistic neo-Marxist dependency theories" because they

negate important internal impediments to economic growth in Africa. Ergas (1986, p.28) concludes boldly that external explanations for Africa's economic problems are significantly outweighed by internal causes; which include excessive state control of the economy; massive and pervasive corruption; merciless exploitation of the peasantry; and political instability. In the beginning years of independent, the economies of African states were characterized by the following: closed economic systems (very little integrated with the international economy); monocrop or monomineral economies (one single mineral or crop formed the mainstay of the economy and very much so); and overinvolvement of an authoritarian state (leaving very little room for private initiative) (Schraeder, 2000, pp.106-111). African states came to rely inordinately on foreign aid and foreign loans. By 1994 Sub-Saharan Africa's total debt increased from 15 percent to 90 percent of its GNP (Gross National Product) (Thomson, 2000, p.171). At the end of the Cold War, Africa lost the trump card it previously had in playing off the powers of the West bloc with that of the East bloc and in the economic predicament it found itself, the World Bank emerged as a lender of the last resort. The World Bank made loans and financial support available, upon the condition that African governments sign Structural Adjustment Program (SAP) agreements. These SAPs provided for the downscaling of the role of the state in national economies and severe cuts in state expenditure. By the mid 1990s the majority of African governments had signed SAPs.

Politically, Tordoff (1997, pp.4-14) identifies the following trends in Africa after the attainment of independence: a movement away from pluralism and democracy towards single party systems; the personalization of power in Africa; the decline of political parties and parliaments and the growth of bureaucracies; and the replacement of civilian regimes with military ones. In the 1960s, 1970s, and 1980s Africa was the scene of numerous civil wars and coup d'etats. Concomitant with the liberalization of economies (described above) the global wave of democratization also began to affect Africa from the early 1990s.

The economic liberalization and political democratization which began in the early 1990s, resulted in an about turn of Africa's position. While the real per capita gross domestic product of sub-Saharan Africa declined from 1981 to 1990 at an average rate of 1.5 percent *per annum* (Europa Publishers, 1997, p.1), per capita gross domestic growth amounted to 3.7 percent in 2003, 4.6 percent in 2004, and 5.8 percent in 2005 (Cobbett, 2004, p.19). The continent's output grew by 5 percent in 2007 and by 7 percent in 2008, and even in the global recession of 2009 managed to grow by 2 percent during that year (Perry, 2010, p.46). Between the years 2000-2010 six of the ten fastest growing economies in the world were in Africa: Angola, Nigeria, Ethiopia, Mozambique, Chad and Rwanda (Mills & Herbst, 2012). Trade between China and Africa increased from US\$ 55 billion in 2006 to US\$ 90 billion in 2009 (Perry, 2010, p.46). In 2006, for the first time, foreign direct investment into Africa was greater than aid: US\$ 48 billion against US\$ 40 billion (*Ibid.*). An indication of its global economic stature taken as a continent, Africa has the tenth largest economy in the world, with an annual gross national income of US\$ 978.3 billion – ahead of India's (eleventh place) US\$ 906.5

billion (Mahajan, 2009, p.8). As far as political developments are concerned, 40 of the 49 African states now regularly have multiparty elections, compared to only three in the 1970s (Mills & Herbst, 2012). While there still were 15 wars on the continent in the 1990s, it has now decreased to five (*Ibid.*).

4. Historical evolution of higher education in Africa

The university, at least in its contemporary form, is a very recent phenomenon on African soil. It appeared only in the colonial era, and late in the colonial era at that. It appeared somewhere during the colonial era in Saharan Africa; in Sub-Saharan African countries with substantial European settler populations it appeared about a decade before independence, while in the rest of Africa the university only emerged during the first post-independence years. An example of Sahara Africa is Egypt. The King Fouad the First University (later renamed the Egyptian University, and still later, in 1952, the University of Cairo) came into existence in 1906, followed by the American University in Cairo (established in 1920) (Hererra, 2006, p.411, p.412).

Even a decade after the Second World War, on the eve of independence, only three universities existed in Anglophone Sub-Saharan Africa, namely the University of Fort Hare (South Africa); Makerere University (East Africa), and the University of Cape Coast (West Africa). The universities for the white segment of the South African population discounted, and even they existed only since the late nineteenth century. In the few African colonies with substantial white settlers, universities came into being after mid-twentieth century: 1955 in Rhodesia (the pre-independence name of Zimbabwe), 1970 in Mozambique and 1962 in Angola. One exception was South Africa. In South Africa, universities were, as the rest of the education system and society at large, rigidly segregated along racial lines. The first university for whites, the University of the Cape of Good Hope, was founded in 1873. Eventually, by 1968, nine universities for white South Africans existed. The first university for black South Africans, the University of Fort Hare, can trace its beginnings back to 1916. As part of a particular political context, another seven universities for black South Africans were created (*cf.* Wolhuter, 2009).

Most states in Africa became independent and came into existence without a university. The typical African state created its national university, during the first years after independence. Examples are the University of Zambia, established in 1967 (three years after Zambia became independent in 1964), the University of Namibia, established in 1992 (two years after the advent of independence in 1990) and the University of Swaziland, which came into existence as a national autonomous university in 1982 (sixteen years after independence in 1968). Leaders of the newly independent African countries established as one of their priorities creation of a university; not only because a modern state is inconceivable without a university, and of the symbolic value of a university, but also in times of modernization theory and human capital theory, education (and as part of

education, higher education and particularly the university) was seen as the most important instrument to modernize society and to promote national economic development (*cf.* Fägerlind & Saha, 1984, p.516) – sorely and urgently needed in the economically poor newly independent African countries.

For the 1960s, 1970s, and 1980s, that was the pattern in Africa – one country, one university. It was only in the 1990s that another cycle of growth began, leading to a proliferation of universities. This time a sizeable number of the new institutions were private universities, which were now allowed as part of the embryonic stage African countries; after such private institutions of higher education were not allowed by governments in the 1960s, 1970s and 1980s. As an example, Angola could be taken. In total there are 55 public institutions and 22 private institutions of higher education, with an academic profession complement of 2,731 at private institutions and 2,590 at public institutions. The student body consists of 72,833 at private institutions and 49,519 at public institutions (2011 figures) (Nsiagengo, André & Wolhuter, in press). By 2007, there were already 200 public universities and over 100 (and still a rapidly growing number of) private universities in Africa (Materu, 2007).

5. State of the African higher education project: Quantitative dimension

Since independence, Africa has been the scene of spectacular higher education enrollment growth. The growth of enrollments in Sub-Saharan Africa and in the Arab states (the Sahara countries of Africa fall in this category) and, for a comparative yardstick, in the world, is presented in Table 1. As can be seen in Table 1, higher education enrollments in Africa have been growing impressively the past decade, as part of a world trend of higher education expansion. From 1999 to 2008, in less than a decade, global higher education enrollments have increased by more than 50 percent, from 93.6 million to 158.7 million (UNESCO, 2013).

Year	2000	2011
Arab States	5,087,565	7,889,480
Sub-Saharan Africa	3,821,291 6,034,114	

Table 1. Higher education enrollment growths in Africa

Source: UNESCO (2013)

	Table 2. Gross high	er education enro	ollment ratio (%)	growth in A	Africa and in the world
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Year	2000	2011
Arab states	18	23
Sub-Saharan Africa	4	8
World	18	30

Source: UNESCO (2013)

Measured by gross higher education enrollment ratios, Africa's higher education progressed as presented in Table 2. The statistics contained in Table 2 indicate significant growth and progress, more so if it is recalled that in 1960, at independence, the gross higher education enrollment ratio for Africa stood at a paltry one percent. However, Africa and especially Sub-Saharan Africa is sorely lacking behind the rest of the world.

6. State of the African higher education project: Quality dimension

6.1 Input quality

Based on the aforementioned definition of input quality, this section focuses, in turn, upon financial input, staff supply, and physical facilities.

The level of financial input is measured by the indicator of per student public spending per year. Compared to international benchmarks this is very low in Africa. In a recently published taxonomy of national education systems (Wolhuter, 2011), it appeared that whereas in the developed countries annual per student public spending on higher education level is in the region of US\$ 9,000 to US\$ 18,000 per year, in most African countries this figure stands at about UA\$ 1,000 (Wolhuter, 2011, p.241). What is more alarming, is that this figure is declining. Africa has maintained this public investment in higher education over the last 15 years, allocating approximately 0.78 percent of its GDP and on average 20 percent of its current public expenditures on education to the higher education sector. However, the total number of students pursuing higher education has tripled, climbing from 2.7 million in 1991 to 9.3 million in 2006 (an average rate of 16 percent), while public resources allocated to current expenditure in that sector only doubled (an annual average rate of six percent) (World Bank, 2010a, p.1). A number of factors have constrained the growth of public expenditure on higher education in Africa during the past few decades. The Structural Adjustment Packages signed by African governments have invariably dictated that total governmental expenditure had to be curtailed. World Bank policy papers have attached greater weight on primary and secondary education expansion, as have initiatives such as the Education For All movement and the Millennium Development Goals.

Year Region	2000	2011
Arab states	24	23
Sub-Saharan Africa	28	26

Table 3. Number of students per lecturer at African universities

Source: UNESCO (2013)

One common (if crude) measure of providing the supply of academic staff, is the number of students per lecturer ratio. These and trends in this ratio are depicted in Table 3.

These figures suggest that African universities are considerably worse off regarding supply of academic staff than the international norm, although while Africa's supply has marginally improved over the past decade, the international aggregate points to a decline. Between 1999 and 2008 the global aggregate number of students per academic has increased from 14.6 to 15.9 (UNESCO, 2013).

The meager financial input means physical facilities on the campuses of African universities frequently leave much to be desired. Collins (2013, pp.21-65) describes this problem as follows:

The physical infrastructure for higher education in Africa is often described as "dilapidated," as buildings at many institutions suffer from deferred maintenance. More substantive issues related to the physical plant revolve around the size and effectiveness of classroom space, access to computers, practical experience in laboratories, and student housing. Given rapid enrollment expansion, there are cases in which large lecture halls are not able to hold all the students enrolled in a classroom. Some students have reported learning by students passing messages to those standing in the hall or stand outside windows and try to hear what the professor says. Practical experience in laboratories is a major issue for the sciences. There is a strong need for equipment and laboratory space so that students can understand the concepts outside of theoretical, classroom-based learning. Applied sciences do not give students a strong skill set when there is limited equipment and facilities.

6.2 Process quality

As could be expected from the low financial input, poor physical facilities and high student-lecturer ratios, the quality of instruction at universities in Africa often leaves much to be desired. A recent World Bank (2010b) study on education in Swaziland, for example, commented that at the University of Swaziland, study programs are quite traditional, dominated by lectures (World Bank, 2010b, p.92). There is a heavy reliance on lectures, which does not encourage independent and critical student thinking; "passive" class hours are at the order of the day (World Bank, 2010b, p.93). An aggravating factor is that at Sub-African universities the language of teaching and learning is invariably (with the exception of the few historically white Afrikaans universities in South Africa) the ex-colonial language, *i.e.* English, French or Portuguese. Even in places in Sahara Africa, such as Morocco, the ex-colonial language is used rather than Arabic. Even in countries where Arabic is used, substantial numbers of students in these countries of Sahara Africa are not Arabic first language speakers. All this means that students must attend lectures, do their studying, writing assignments and examinations, etc. in a language which is not their first language. Low salaries paid to academic staff means that many academics have to moonlight, doing other work besides their university work, in order to make ends meet (Teferra & Altbach, 2003). This distracts them from their academic duties to the detriment of the quality of education offered to students.

The quality of faculty suffers under conditions of low pay and poor working conditions, resulting

in universities employing poorly qualified faculty, and losing good faculty due to the brain drain to other parts of the world and to the private sector. An estimated 23,000 academics and 50,000 middle and senior personnel leave the continent each year (National Association of State Universities & Land-Grant Colleges, 2008). More than 40,000 Africans with PhD's live outside the continent (*Ibid*.). Yet African universities struggle to recruit suitably qualified faculty. A study indicated that the percentage of staff with a PhD in the natural sciences and engineering departments in the universities of Nairobi, Addis Ababa, Malawi, Lagos, Ahmado Belo, Kwame Nkrumah, Jomo Kenyatta, Dar Es Salaam, Botswana, Ibadan, and Cape Coast Universities was just about 50 percent (*Ibid*.).

To compound the challenges of finding faculty, the academic profession in Africa is aging, as senior faculty, who were appointed as junior faculty with the creation and expansion phase of the 1960s and who are the most qualified, experienced and productive faculty, are now approaching retirement (*cf.* Van der Walt, *et al.*, 2009). By 2006 some 43 percent of faculty at the University of Nairobi and 50 percent at the University of Ghana were over the age of 50 years (National Association of State Universities & Land-Grant Colleges, 2008).

6.3 Output quality

Comprehensive indices and international data banks about quality of output especially along the teaching-learning line, are not as readily available as for example for the quantitative dimensions of the higher education project, but a good indication of output quality of universities could be gained from the many university ranking systems in currency. At least research outcome is captured in the indices used by these ranking systems. The two most well known university ranking systems, those of the *Times Higher Education Supplement* and the *Shanghai Jiao Tong University* rank respectively only the top 500 and 400 universities in the world – a tiny fraction of all the universities in the world. For this study, use will be rather made of the ranking of the *Ranking Web of World Universities* by the Cybermetrics Laboratory of the Consejo Superior de Investigaciones Cientifices, the Public Scientific Research Council of Spain (CSIC), which includes all (some 22,000) higher education institutions in the world. This ranking is also widely regarded as authoritative (Liu & Chen, 2011, p.14; Aquillo, Bar-Ilan, Leveno & Ortaga, 2010, p.243). This ranking is based on webmetric indicators, including number of publications by academic staff on Google Scholar (a measure of research output). According to this ranking, the top ten universities in Africa are as presented in Table 4.

While it is encouraging that some universities in Africa do stand in the top 15 percent of world universities (as can be seen in Table 4), the mean ranking of the 974 higher education institutions of Africa included in the ranking system stands at rank 15,653, well down to the bottom of the approximately 22,000 institutions of higher education worldwide included in the ranking system. Only 223 of the 974 African institutions of higher education fall in the top half of the institutions world wide ranked in the system.

Rank in Africa	Rank in international order (out of c.22,000 higher education institutions in the world)	Name of University
1	381	University of Kwa-Zulu-Natal (South Africa)
2	390	University of Cape Town (South Africa)
3	462	University of Stellenbosch (South Africa)
4	696	Makerere University (Uganda)
5	719	University of the Witwatersrand (South Africa)
6	746	University of Pretoria (South Africa)
7	834	University of the Western Cape (South Africa)
8	1,113	Obafemi Awolowu University (Nigeria)
9	1,191	Rhodes University (South Africa)
10	1,206	Cairo University (Egypt)

 Table 4
 Top ten universities in Africa as per ranking by the Consejo Superior de Investigaciones Científices, Spain

Source of data: Cybernetics Laboratory of CSIC (Consejo Superior de Investigaciones Científicas) (2013)

The research output of Africa is low and does not register very strongly on the world scale. In a recently published analysis of the geographical provenance of authorship in the top three (by impact factor) international journals in the scholarly field of Education, for the decade 2001-2010, a paltry 0.2 percent of authors are from African countries (Wolhuter, 2013) – and all these are from South Africa. This points to another problem in the research output of African universities – the dominance of South Africa and a few other countries and the virtual absence of all others. South Africa and Egypt together account for half of Africa's scientific publications; an additional 25 percent is generated collectively by Kenya, Morocco, Nigeria, and Tanzania (Shabani, 2008).

6.4 Product quality

A widespread (although a very narrow and incomplete measure) index of product quality is rate of return analysis. It should firstly be mentioned that one major reason for the stagnation of higher education growth in Africa in the 1980s was a series of calculations of rates of return analysis which was used by the World Bank (for example, *cf.* World Bank, 1988) which showed a greater rate of return for primary and secondary education and which formed a case frequently made by the World Bank for governments and foreign aid organizations to refrain from investing in the expansion of higher education and to use funds rather for basic education (Collins, 2013). Fortunately this claim has been retracted by the World Bank (2002), and many studies have demonstrated quite impressive rates of return for higher education. On social rates of return and public benefit to de derived from higher education, Bloom, Canning and Chan's (2006) study of Africa found that tertiary education's

effect on technological catch-up and increased economic productivity may, overtime, result in a boost to incomes of 12 percent for each one-year increase in tertiary education stock. Some studies, such as the analyses of Kuepié and Nordham (in press) in the Republic of the Congo, have even showed that in some African countries and contexts, rates of return to tertiary education are even bigger than rates of return to primary and secondary education.

On the point of the product of higher education and its impact on Africa mention should also be made of the "brain drain", the large scale exodus of university graduates to greener pastures in countries of the North, bleeding Africa dry of much needed highly skilled human resources. One in every nine people who are born in Africa and have a university degree is a migrant in one of the 34 member stated of the OECD – the world's most developed countries (Kigotho, 2013). Forty-three percent of Zimbabwe's highly educated people and 41 percent of Mauritius' highly educated people are residing in the OECD (*Ibid.*). There reportedly are more Sierra Leonean doctors living in the Chicago area than in Sierra Leone and an estimated 600 Ghanaian doctors work in the New York City (about 20 percent of the Ghanaian requirement) (National Association of State Universities and Land-Grant Colleges, 2008). For every 100 professionals sent overseas for training between 1982 and 1997, 35 failed to return to Africa (*Ibid.*).

7. State of higher education in Africa: Equality

Glaring inequalities exist in higher education in Africa. This applies to all levels of equality (access, survival, output and product, as outlined above) and with respect to all forms of inequality: gender, socio-economic descent, race, ethnicity and geography. The pattern is complex - this can be illustrated with the example of gender. On the access level, females are out 49 per cent and 38 percent of higher education students in respectively the Arab states and Sub-Saharan Africa. (UNESCO, 2013). Especially the Sub-Saharan Africa figure is well below the world aggregate figure of 51 percent (UNESCO, 2013), this in itself is an indication of the extent of inequality in higher education in Africa. Then it should be recalled that the female percentage varies greatly between different fields of study, the world-wide pattern of some fields being female-dominated and some male-dominated being present in a superlative degree. For example, in Mauritius, even though overall enrollment shows a more or less even gender distribution (47 percent female), enrollments vary by gender across disciplines, with a predominance of male students (76 percent) in the faculty of engineering and a predominance of female students (68 percent) in the faculty of social studies and humanities (Teferra & Altbach 2003). Inequalities do not exist on the access level, but are perpetuated and compounded at the levels of survival, output and product. In the Republic of the Congo, for example, Kuepié and Nordham (in press) found in their empirical study that among the section of the population with higher education qualifications, the unemployment rate was 18 percent in the case of males and 29 percent in the case of females.

8. Conclusion

On the global scene Africa, especially Sub-Saharan Africa, was a late starter as far as the development of higher education is concerned. The development of national higher education systems really only began after the advent of independence in 1960, and even after that for a further three decades its expansion was hampered by a number of factors such as global economic crises, unfavorable economic, and political national contexts, and the World Bank having argued vociferously against continued expansion of higher education in Africa. These factors were reversed after 1990, resulting in a up to now continuing expansion of higher education in Africa. While enrollment ratios, quality and equality in higher education in Africa is lagging behind the rest of the world, the growth in enrollments are encouraging, and the current economic boom and politic pacification of the continent bodes well for the evolution of higher education in coming years and decades.

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