

The Relationship Between Public Funding and Student Access: The Case of Two Public Universities in Africa

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ABSTRACT

We examine changes in public funding and student access, and the role resource capacity plays in access to higher education by students in two public universities in Africa namely the University of the Western Cape, South Africa, and the University of Ghana, Ghana. The public funding of higher education and student access in South Africa and Ghana have changed over time, and various issues of concern have been raised about the changes. The concerns raised border on the consistent decline in funding, especially public funding. With scarce resources, the governments cannot provide adequate financial support due to factors such as competing interests from other sectors of the economy. We discuss the nature of the changes in public funding and student access from 2007 to 2016. Data analysis is interpreted mainly through the lenses of resource dependence theory.

Keywords: state funding, accessibility, variations, correlation, public universities, Africa, Ghana, South Africa

The main purpose of this study is to illuminate how two public African universities are managing relationship difficulties between public funding and student access. In doing so, we consider policy aims, the functioning of the system and resource constraints. We take a general balanced approach to higher education funding and student access. This means that higher education funding and student access are

studied together and brought into relationship with one another. The aim is to avoid a narrow focus on individual variables.

In South Africa, high levels of poverty and socio-economic inequality have made the funding of students from deprived households a necessity (Plagerson, & Mthembu, 2019). Expanding the participation rate of youth in the higher education system became a priority. The goal was to increase the participation rate of 18 to 24-year olds from 15 percent to 20 percent over a 10 to 15 year period, to meet a growing demand from groups that had previously been denied access to higher education (Council on Higher Education, 2016).

In the twenty years post the introduction of democracy, South Africa experienced a significant growth in student enrollments in higher education, and a major change in the demographic make-up of the student body (Wangenge-Ouma, 2021). These accomplishments were made possible by the carrying out of policy measures such as affirmative action; the acceptance of prior learning to aid access for mature students; extended curriculum programs for students that show potential; and a state-funded national student financial aid scheme (Council on Higher Education, 2016). While access for students has grown rapidly over the years, an increase in public funding to match the growth in access has not occurred (Wangenge-Ouma, 2021). South Africa is struggling to afford its higher education funding, and considerable international literature has been published in recent years on a potential crisis in higher education, mainly caused by reduced public funding levels (National Treasury, 2023). For example, expenditures in higher education and training as a percentage of GDP was 2.0 percent in 2022/2023 financial year; however, this has declined to 1.9 percent of the GDP in 2023/2024 financial year (Department of Higher Education and Training, 2024).

Table 1 shows a breakdown of the various sources of income for public universities from 2017/2018 to 2021/2022. Over the last five years, the largest share of income in public universities has consistently been from government. Government funding allocation to universities has hovered between 39 percent and 44 percent over the past five years. Over one-third of university income was from student fees. As indicated in Table 1, the portion of income from third-stream sources has been fairly consistent over the past five years, with about one-quarter of university income sourced from third-stream sources in 2021/2022.

Table 1: Income for Public Universities by Main Sources: 2017/2018-2021-2022

Year	Government	Third stream income	Student fees
2017/2018	39%	27%	34%
2018/2019	41%	24%	35%
2019/2020	42%	24%	33%
2020/2021	44%	23%	33%
2021/2022	41%	25%	34%

Source: Department of Higher Education and Training, 2024

As changes in public funding keep fluctuating, there have been enormous increases in student access in recent years. For instance, in 2019 alone, over 800,000 matriculants hoped to access higher education, but with 26 public universities admitting only one million students, the competition for places was tough as first-time graduates also struggle to find employment (Mlambo et al., 2021). The increases in higher education enrollment without corresponding funding has affected the quality of education offered and, as a result, those who have finished their undergraduate degrees come back to universities for postgraduate studies not because they want to enroll into postgraduate studies but because they cannot find jobs (Mlambo et al., 2021).

Diminishing financial support for the higher education sector is a global trend, and Ghana is no exception. Modes of higher education funding in Ghana are not significantly different from the overriding approach evident from the rest of the world. In Ghana, expenditures on education as a percentage of GDP was 6-8 percent between 2011 and 2015 (The World Bank, 2021). In recent years, this has declined to 3.9 percent of the GDP in 2018 for education in general and 1.2 percent in tertiary education as last recorded by the World Bank (World Bank, 2021). As contained in the budget statement and economic policy of government for the 2024 financial year, the Ministry of Education has been provided with a budgetary allocation of 29,514,197,713 Ghana Cedis (GH29, 514,197,713) to implement its programs and activities for the 2024 financial year. The breakdown of the allocation in terms of funding sources is presented in Table 2.

Table 2: Allocation in Terms of Funding Sources in Ghana

Sources	Amount (GH)	Percentage Share
Government	22,852,369,750	65.90%
ABFA	2,400,899,587	13.00%
IGF	3,433,253,155	13.60%
Donor	827,675,221	7.50%

Source: Parliament of Ghana, 2023

Ghana's government share of higher education funding is 65.90 percent in 2024 (Parliament of Ghana, 2023). Annual Budget Funding Amount (ABFA) is the annual allocation to the national budget from the petroleum receipts. The Ghanaian government's share of 65.90 percent was the biggest of the four sources, followed by Internally Generated Funds (IGF) from higher education institutions with a 13.60 percent share. Donor funding occupied the last position with just 7.50 percent.

As changes in public funding keep fluctuating, there has also been dramatic changes in student access over the years. For instance, as discussed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics (2021), Ghana had a total higher education enrollment of 15.7 percent in 2018, compared to 11.8 percent in 2011, with the former representing about 2,879,063 of the population aged 19 to 23. The total enrollment of female students increased from 8.9 percent in 2011 to 13.6 percent in 2018. On the other hand, enrollment for males increased from 14.5 percent in 2011 to 17.7 percent in 2018 (UNESCO Institute

of Statistics, 2021). Perhaps because of the apparent rise in student enrollment as espoused by some scholars, universities in Ghana are confronted with inadequate funds, which have brought about deteriorating infrastructure and facilities, falling standards, questionable relevance and quality of academic programs, and a general lack of enthusiasm of faculties.

The gap between funding of higher education and student access to higher education is a matter of concern because of its effects on socio-economic life of people and national economy. A country's economic growth hinges on its manpower development resulting from its investment in education. The paper is divided into three main sections. The first section reviews the literature on various funding challenges facing higher education institutions. The second section examines the findings of the study, and the last section discusses the findings. The analysis of data is viewed and interpreted mainly through the lenses of resource dependence theory.

Research Objective

The main objective of the study was to examine the kind of role resource capacity plays in access to higher education by students in two public universities in Africa.

Research Question

The main research question is: What role does resource capacity play in access to higher education in two public universities in Africa? In other words, does resource capacity increase student access?

LITERATURE REVIEW

Higher Education Funding Challenges

Higher education worldwide is facing funding challenges. The world has not found a sustainable mechanism to finance higher education, and, at the same time, the funding allocations to the higher education sector are inadequate, and therefore, the higher education funding climate globally has been in a conundrum for many years (Mgaiwa, 2018). Although as authors we are primarily concerned with the relationship between changes in public funding and student access in South Africa and Ghana, it is necessary to place the ongoing funding debate within the larger picture of financial difficulties being experienced by higher education institutions globally. The assumption is that a clear understanding of the funding challenges facing public universities will open up a more holistic analysis of the objective of this study.

To illustrate the funding challenges, Wangenge-Ouma (2011) opined that funding challenges of higher education institutions are a combination of many factors. Firstly, there are funding allocation formulas that do not consider the cost of higher education provision. For example, in Egypt, Kenya, Uganda, Mozambique, and Nigeria, mainly an *ad hoc* funding mechanism (or incremental budgeting) is used. Although higher education institutions present their budgets with the full costs to government, allocations are not based on the budgets presented.

Appropriations to the individual universities are given using the previous year allocations and do not take into consideration the current year costs of higher education provision. Johnstone (2004) is of the view that the primary funding challenges facing higher education institutions come from two forces. The first of these is the high and rising unit cost or per student cost of higher education without a corresponding increase in public funding. He further explains that when these higher education cost build-ups are not offset with an equal measure of revenue from the state, the resultant effect in some cases is an increase in tuition fees culminating in less efficiency, low productivity, and students from poorer economic backgrounds unable to enroll in higher education institutions. Fussy (2017) argued that, due to the unreliable nature of sources of funding and weak economies, funds less than the costs of higher education provision are allocated to higher education institutions by governments. Even in higher education systems like South Africa that have a well-functioning funding allocation formula, the distribution formula is only used to allocate funds made to higher education institutions from the national budget, but the national budget does not take into consideration the actual costs of running higher education (Friedman, 2018).

The next funding challenge facing higher education institutions is the non-disbursement of all approved funds. The state more often than not refuses to disburse fully all agreed funds, which are already inadequate to higher education institutions. In other words, governments do not pay all the funds approved in the budget of higher education institutions (Wangenge-Ouma, 2011). For instance, in the 2009 financial year, the University of Botswana's requested funding was reduced by 7.0 percent by the government of Botswana (Wangenge-Ouma, 2011). In Tanzania, higher education institutions usually obtain about 20 percent to 30 percent of their annual approved budget requests (Fussy, 2017; Kossey & Ishengoma, 2017). As a consequence, this non-disbursement of all approved funds to higher education institutions has created an opportunity for some institutions to over-budget with the hope that even if the government reviews the budget downwards, they would not be affected much (Mgaiwa, 2018). Closely related to the non-disbursement of all approved funding by the government is the late release of the public funds to the higher education institutions. For example, in Kenya, the agreed funds are released one month in arrears, culminating in delay in cash flow leading to the maladministration of finance and less efficiency in administering the academic programs (Wangenge-Ouma, 2011).

Another funding challenge worth mentioning is state control of tuition fees. In many African higher education systems, tuition fees are free or highly subsidized fees are charged, and in these systems, public higher education institutions are not given the autonomous power to decide tuition fees, especially concerning regular students in commensuration with the rising costs of higher education provision (Wangenge-Ouma, 2011). Many higher education institutions, therefore, have expressed concerns that the state is not prepared to allow the institutions to charge realistic fees; neither is it ready to meet the total costs of higher education (Wangenge-Ouma, 2011). The "FeesMustFall" student protests in South Africa led to no tuition fee increases for 2016, culminating in a significant higher education funding gap between the costs of higher education provision and the financial resources available (Moolman & Jacobs,

2018). For example, it is evidenced that the government released some funds to offset the shortfall, but this was not enough as some institutions had to account for up to 30 percent of it (Moolman & Jacobs, 2018). The limited funds resulted in cross-subsidization by the institutions making it difficult for them to meet their obligations, causing the universities to voice their financial concerns of having zero tuition fees for 2016 (Moolman & Jacobs, 2018).

Another funding challenge that cannot escape the lens of scholars is student debt. Increasing student debt has generated a lot of debate within the circles of scholars, policymakers, and the public (Houle & Addo, 2018). In the current state of affairs, much of the scholarly debate on student debt has been discussing whether the increasing student debt could be described as a crisis (Akers & Chingos, 2016). The conundrum of student debt weakens student fees as a reliable source of income for universities (Wangenge-Ouma, 2011). In the United States of America, the average student in the Class of 2016 leaves with 37,172 dollars in student debt (Friedman, 2018), denying the institutions substantial revenue, which could have been used for infrastructure to increase student access and the cause of this in most cases is the increasing costs of higher education, declining public funding, and uncertainty around financial aid.

Again, in the United States of America, more than 44 million Americans have student debt to settle (Scott et al., 2018). Scott et al. (2018) report that together they owe nearly 1.4 trillion dollars on outstanding student debt. It is evidenced that this level of debt undermines public investment in higher education (Scott et al., 2018) with the overall resultant effect going against student access.

In South Africa, higher education is expensive. Receiving a loan has a very strong impact on student access, especially if the student comes from poor economic background. Limited access to higher education is concentrated on the Black African and Colored population. In order to help the historically disadvantaged students and increase access to higher education for the poorest, the government of South Africa has established a contingent loan program called National Student Financial Aid Scheme (NSFAS). Given the South African economic environment, the NSFAS has become a great avenue for poor students to finance their education (Gurgand et al., 2023).

However, the scheme faces myriad challenges. A report by Damons (2023) shows that more than 87,000 university students could lose their National Student Financial Aid Scheme (NSFAS) funding in 2024 due to budget cuts. The acting CEO of NSFAS, Masile Ramorwesi revealed that the average cost per student is 63 935 Rands for the 2024 academic year and from the 10 percent decrease in university funding from National Treasury, 87, 712 students would be left unfunded in 2024 academic year (Damons, 2023).

In Ghana, the government has established the Students Loan Trust Fund (SLTF) to help poor students to finance their education. A recent report revealed that the scheme faces funding challenges to the extent that the scheme failed to pay about GHS50 million (US\$4 million) to qualified applicants in the 2023 academic year (University World News, 2024). According to the Executive Director of Africa Education Watch, Kofi Asare, the insufficient funding of the SLTF resulted in undue delays in the payment of approved loans and cut the number of successful applicants

to only 70 percent (University World News, 2024). The financial barrier to higher education access continues to pose a great threat to poor students, as the students' loan scheme is underfunded.

Brief Account of the Two Universities

The University of the Western Cape (UWC) is famous for its fight against apartheid, oppression, discrimination and disadvantage in modern day South Africa. The university has been at the forefront of South Africa's historic transformation, playing a leading academic role in helping to build an equitable and dynamic country. UWC's key concerns with access, equity and quality in higher education arise from extensive practical engagement in helping the historically marginalized participate fully in the South African society (University of the Western Cape, 2019). The University of Ghana, the premier university in Ghana, was founded as the University College for the purpose of providing and promoting university education, learning and research and to become a world class-research-intensive University (University of Ghana, 2019).

THEORETICAL FRAMEWORK

Resource Dependence Theory

Jeffrey Pfeffer, the American business theorist and Gerald R. Salancik, the American organizational theorist, developed resource dependence theory in the year of 1978 at Stanford University (Pfeffer & Salancik, 1978). The contribution of Gerry Salancik in the field of organizational studies helped to develop the theory further. The first significant work concerning resource dependence theory was a book published by Pfeffer and Salancik in 1978. The title of the book is "The External Control of Organizations: A Resource Dependence Perspective".

The first principle is that there is a need for organizations to acquire resources to survive. Resource dependence theory postulates that the behaviors of organizations (for example, universities) are influenced by the existence of external resources upon which the organization depends for survival (Pfeffer & Salancik, 2003). To ascertain the resources that an organization needs, one must look for the essential resources in the organization's environment. South African and Ghanaian universities such as the University of the Western Cape and the University of Ghana depend on external resources (public funding) for survival. Relying on essential resources influences organizations' actions and a particular dependency situation can explain organizational decisions (Nienhüser, 2008). To be able to understand the behavior of organizations, one must first make clear which critical resources the organization needs.

A particular resource may only represent a tiny part of total resource needs, but it is vital or essential if the missing or the lack of that resource endangers or threatens the ability of the organization to function or survive (Nienhüser, 2008). For example, without public funding, can the University of the Western Cape and the University of Ghana perform their teaching and learning, research, and community engagement

functions, and sustain student access? The criticality, magnitude, or amount of a resource defines its importance and significance to a particular organization's survival (Etomaru et al., 2016). For instance, changes in resources available to the University of the Western Cape and the University of Ghana may determine changes in the number of students to be enrolled.

In short, both the University of the Western Cape and the University of Ghana need resources to be able to increase student access. To provide student access, the universities need lecture halls, residential facilities, lecturers, laboratories, and money. The critical or essential resource is financial because the universities use the money to acquire the other resources, and the lack of it would threaten the survival of the universities. It is important to note that the two public universities already have all the resources mentioned. The challenge has been the inadequacy of the resources. The critical support has been public funding, which seems to be inadequate for the survival of the two universities in terms of increasing student access.

RESEARCH DESIGN AND METHODOLOGY

The methodology for this article depends on secondary sources in the forms of budget, government policy reports and other literatures around the world concerning financing of public education. We reviewed reports from the Ministry of Education Ghana and through published journals in the field of education.

In Ghana, we collected data from policy and strategic documents such as the annual reports and strategic plans of the University of Ghana. The budget reports of the National Council for Tertiary Education (NCTE), which is in charge of the universities in Ghana, were also of great help in terms of the evidence to the effect that government allocations to the universities have been declining over the years in Ghana. The Council prepares the budget reports annually. They provide statistical analysis of important areas of economic and financial activities of the universities in Ghana.

In South Africa, the Ministerial Statement on University Funding-2015/16 and 2016/17 gave a fair idea of the cost per student in a year and the total cost of attending a university for the entire duration of a course of study. This report explains the funding formula and how the allocations to the universities are done. The Ministerial Statement on student enrollment planning 2014/2015 to 2019/2020 for universities shows national enrollment targets and institutional enrollment targets. It further highlights the challenges facing public universities in their quest to increase student access.

Codd's (1988) framework, entitled *The Construction and Deconstruction of Educational Policy Documents*, guided the examination of documents in this study. Codd argues that policy documents do not cover only one authoritative meaning, nor do they express a set of government's unambiguous intentions. Rather, Codd argues, they have been created within a specific political and historical context, which calls for policy critics to unravel that context. In light of Codd's framework and our research question, the analysis of policy documents began with the search of documents through accessing the websites and offices of the University of Ghana, the University of the Western Cape, National Council for Tertiary Education (NCTE) and

the Department of Higher Education and Training (DHET) of South Africa, followed by critical reading, analysis and evaluation of the meaning of the findings.

This article highlights the nature of public funding of education and student access in developing countries especially the sub-Saharan Africa. Ghana and South Africa were chosen for the study because of the various policies that the two countries have formulated and implemented that have gotten the attention of the world. For example, South Africa has a well-functioning National Student Financial Aid Scheme (NSFAS), and Ghana has Ghana Education Trust Fund (GETFund), with the aim of increasing student access. Therefore, this paper analyses the relationship between public funding of higher education and student access.

RESULTS

Changes in Public Funding and Student Access at UWC

In South Africa, the *Higher Education Act of 1997* gives the Minister of Higher Education and Training the power to settle on the extent and limit of the operations of (a) the public higher education system and (b) individual public higher education institutions. This means that the Minister can specify the academic programs that a higher education institution can provide and how many students should an institution admit (Bunting et al., 2010). The University of the Western Cape and other universities negotiate with the Ministry of Higher Education and Training to set enrollment targets based on the available resources (number of spaces available, number of lecturers, funding) for that particular year. The study found that UWC's enrollment yearly targets have been around 5-10 percent. Table 3 illustrates public funding allocations and student enrollment at UWC.

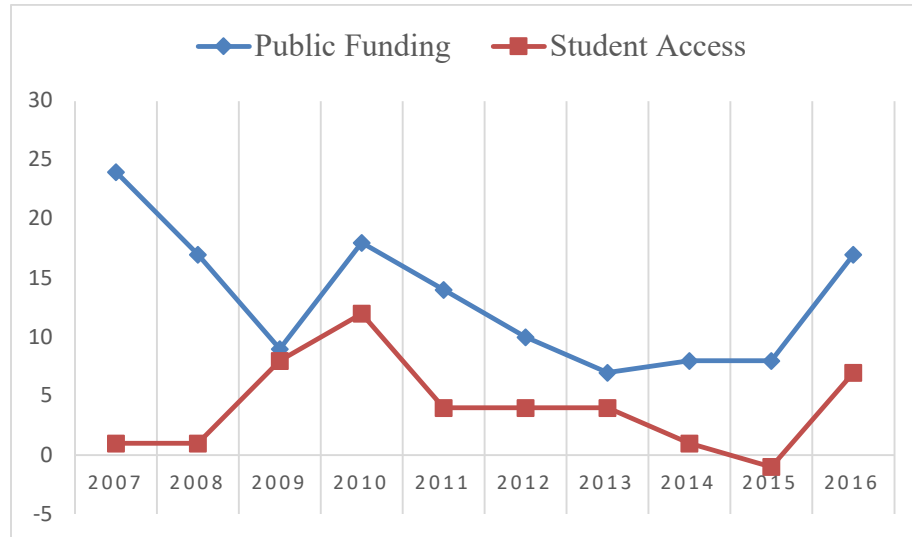
Table 3: Public Funding and Student Enrollment at UWC, 2007-2016

Year	University of the Western Cape			
	Public Funding Amount (in dollars)	(in dollars)	Rate of Change (Public Funding) (in percentage)	Student Enrollment Rate of change (Student Enrollment) (in percentage)
2006	20,162,210	-	-	14838
2007	24,904,958	23.5	14927	0.6
2008	29,238,590	17.4	15074	0.98
2009	31,804,941	8.8	16203	7.5
2010	37,493,309	17.9	18059	11.5
2011	42,564,203	13.5	18764	3.9
2012	46,763,149	9.9	19591	4.4
2013	50,118,064	7.2	20383	4.0
2014	54,106,428	8.0	20582	0.98
2015	58,465,163	8.1	20382	-0.97
2016	68,329,762	16.9	21796	6.9

Source: HEMIS database, 2006-2016.

As shown in Table 3, the 2006 figures were just used to calculate the 2007 rate of change, but the study was from 2007 to 2016. The currency exchange rate was in December 2019. Figure 1 shows the rate of change between public funding and student enrollment at UWC from 2007 to 2016.

Figure 1: Rate of Change between Public Funding and Student Enrollment at UWC



Source: Authors' calculation based on the data. Note that the figures have been rounded up.

Figure 1 illustrates the UWC's data on the rate of change in public financing and the rate of change of publicly funded students (student enrollment) from 2007 to 2016. Public funding to UWC declined from 23.5 percent in 2007 to 16.9 percent in 2016. However, the same period saw student enrollment increasing from 0.6 percent in 2007 to 6.9 percent in 2016. It is apparent to see that the rate of change in public funding to UWC has declined, but, while all the years saw changes, not all grew at the same rate. The largest one-year changes were in 2007 (23.5 percent), 2008 (17.4 percent), 2010 (17.9 percent) and 2016 (16.9 percent) whereas, in terms of student enrollment, the largest one-year changes were in 2009 (7.5 percent), 2010 (11.5 percent) and 2016 (6.9 percent). The smallest rates of change in public funding were 7.2 percent in 2013, 8.0 percent in 2014, and 8.1 percent in 2015, while the smallest rates of change in student enrollment were 0.6 percent in 2007, 0.98 percent in 2014 and negative 0.97 percent in 2015. Notably, within ten years (2007-2016), public funding to UWC has grown at a rate of 13.1 percent per year on average, whereas student enrollment has grown at a rate of 3.98 percent per year on average compared with the institution's yearly target of 5-10 percent increase. It has been argued that changes in public funding patterns affect student enrollment, with implications for how successfully the university is likely to meet its target.

Increases in student enrollment seem to follow the same pattern as public funding, as illustrated in Figure 1. Even though generally there is a downward trend in public funding, increases in student enrollment seem to result from an upward adjustment in public financing, and decreases in student enrollment largely result from decreases in the public funding during these years (2007-2016). The study concludes from the analysis that increasing or decreasing public funding influences the extent to which changes in student enrollment occur. It is evident that having less public funding leads to lower levels of student enrollment at UWC. The next section analyses changes in public funding and student access at the University of Ghana.

Changes in Public Funding and Student Access at UG

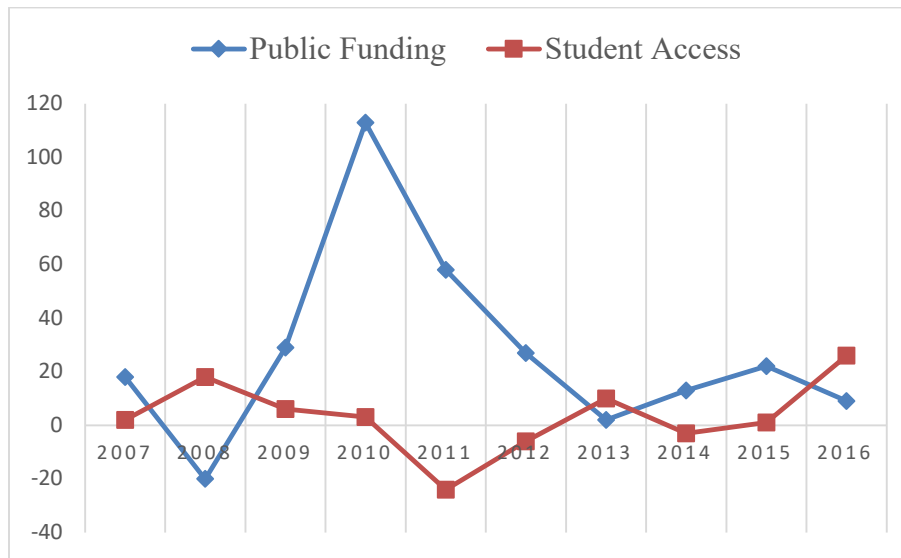
The University of Ghana sets its enrollment targets based on the available resources (the number of lecturers, amount of equipment, number of lecture rooms) to determine what they call the Current Capacity of the university for that particular year. The university typically has an enrollment target of a 10 percent increase annually. Table 4 shows public funding allocations and student enrollment at UG, 2007-2016.

Table 4: Public Funding and Student Enrollment of UG, 2007-2016

Year	University of Ghana			
	Public Funding (Amount in dollars)	Rate of Change (Public Funding) (in percentage)	Student Enrollment	Rate of change (Student Enrollment) (in percentage)
2006	5,556,110	-	28236	-
2007	6,558,006	18.0	28920	2.4
2008	5,276,742	-19.5	34199	18.0
2009	6,800,916	28.9	36092	6.0
2010	14,494,283	113.1	37257	3.0
2011	22,916,981	58.1	28305	-24.0
2012	28,979,360	26.5	26633	-6.0
2013	29,617,865	2.2	29223	10.0
2014	33,472,517	13.0	28288	-3.2
2015	40,761,940	21.8	28552	0.9
2016	44,510,485	9.2	35950	26.0

Source: National Council for Tertiary Education, 2018; University of Ghana Finance Office; National Council for Tertiary Education Finance Office

As shown in Table 4, the 2006 figures were just used to calculate the 2007 rate of change, but the study was from 2007 to 2016. Figure 2 shows the rate of change between public funding and student enrollment at UG from 2007 to 2016.

Figure 2: Rate of Change between Public Funding and Student Enrollment at UG, 2007-2016

Source: Authors' calculations based on the data. Note that the figures have been rounded up.

Figure 2 illustrates the UG's data on the rate of change of public funding and the rate of change of publicly funded students (student enrollment) from 2007 to 2016. Public funding to UG declined from 18.0 percent in 2007 to 9.2 percent in 2016. However, the same period saw student enrollment increasing from 2.4 percent in 2007 to 26 percent in 2016. It is apparent to see that the rate of change of public funding to UG has declined. While all the years saw changes, not all grew at the same rate. The largest one-year changes were in 2009 (28.9 percent), 2010 (113.1 percent), and 2011 (58.1 percent), whereas in terms of student enrollment, the largest one-year changes were in 2008 (18 percent), 2013 (10.0 percent) and 2016 (26 percent). The smallest rates of change in public funding were negative 19.5 percent in 2008, 2.2 percent in 2013, and 9.2 percent in 2016, while the smallest rates of change in student enrollment was negative 24 percent in 2011, negative 6.0 percent in 2012, and negative 3.2 percent in 2014. Notably, within ten years (2007-2016), public funding to UG had grown at a rate of 27.13 percent per year on average, whereas student enrollment had grown at a rate of 3.3 percent per year on average compared with the university's yearly target of 10 percent student enrollment increase. Even though the university grew at an average rate of 3.3 percent in student enrollment within a decade (2007-2016), UG did not achieve its annual target of a 10 percent increase.

Increases in student enrollment do not follow the same pattern as public funding, as illustrated in Figure 2. Even though generally there is a downward trend in public funding, increases in student enrollment do not result from an upward adjustment in public financing, and decreases in student enrollment largely do not result from decreases in the public funding during these years (2007-2016). We conclude from

the analysis that increasing or decreasing public funding does not influence the extent to which changes in student enrollment occur. It is evident that having less public funding does not lead to lower levels of student enrollment at UG.

One of the assumptions of resource dependence theory is that, in times of resource scarcity, universities may reduce their programs or close some of the departments to cut down costs, which may culminate in the decrease in enrollment. We found no evidence that some of the changes in enrollment at both institutions were attributable to a decrease in academic programs or the closing down of some departments to cut down costs.

DISCUSSION

Comparative Analysis

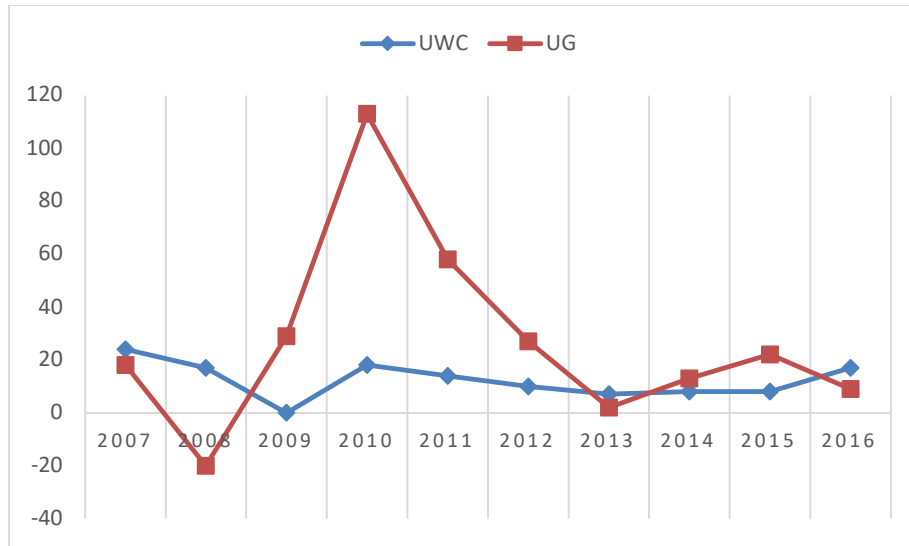
Concerning student enrollment targets, universities in South Africa have a national enrollment plan, a five-year national enrollment plan, which they decide upon with the Department of Higher Education and Training (DHET). The targets they decide on are linked to the various degrees that are offered in the universities. For example, how many Ph.D., Masters, Honors, and undergraduate students can a university admit? This is linked to the resources of the institution, like class sizes and available lecturers. The DHET approves UWC's enrollment targets. This is in line with resource dependence theory's argument that organizations set their targets according to the available or the estimated resources.

The DHET technically sets the targets for the university, but there is always a negotiation between the two in terms of how many students the university can take. The government subsidy is also linked to the number of students that the university admits, and the institution is not allowed to go over a certain percentage of the target. For example, if the university over-enrolls or under-enrolls by more than 2 percent of the target, the university is penalized. The University of the Western Cape's enrollment plan is always with an upward projection. The university's five-year development plan is always that the numbers increase year-on-year, and then the university has to ensure that resources are put in place to match the increases. The annual targets have been around 5-10 percent increase in student enrollments.

Unlike universities in South Africa, universities in Ghana have no national enrollment plan. Individual universities set their student enrollment targets with no discussion with the government. For the University of Ghana, there is what they call the "General Quotas Committee". The General Quotas Committee meets and considers various factors such as the number of lecturers, the amount of equipment, the amount of equipment for science or for practical based courses, the number of classrooms, and government subsidy to determine what they call the "Current Capacity of the University". Those factors determine how many students could be admitted in a particular year. The University of Ghana's annual targets have been around a 10 percent increase in student enrollments. What is common to both University of the Western Cape and University of Ghana, however, is that both universities' enrollment plan is always that the enrollment increases year-on-year.

Regarding changes in public funding and student enrollment, several trends can be teased out. A comparative analysis of the public funding and student enrollment patterns at the two universities in the ten-year period 2007-2016 shows trends that are both similar and different. Figure 3 shows the rate of change in public funding of UWC and UG from 2007 to 2016.

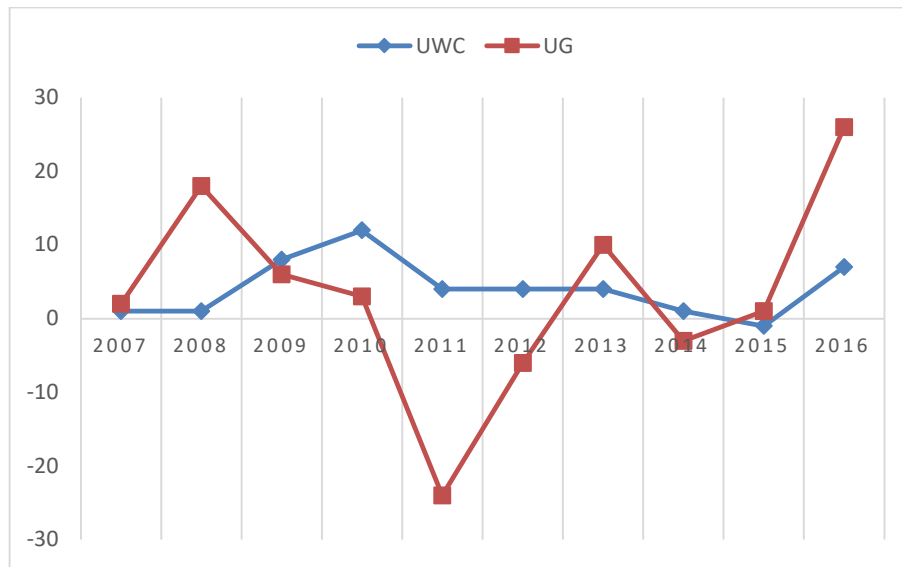
Figure 3: Comparison of Rate of Changes in Public Funding at UWC and UG, 2007-2016



Source: Authors' calculation based on the data. Note that the figures have been rounded up.

Figure 3 shows that at both institutions changes in public funding were greater in the 2007- 2011 period (except 2008 for UG) than they were in the 2012-2015 period. One major difference that characterizes changes in public funding at the two universities is that public funding to UG is marked by monumental fluctuations, including significant reductions in 2008, 2013, and 2016. In contrast, UWC's is relatively stable, marked by small and moderate changes. Figure 10 below shows the rate of change in student enrollment at UWC and UG from 2007 to 2016.

Figure 4: Comparison of Rate of Changes in Student Enrollment at UWC and UG, 2007- 2016



Source: Authors' calculation based on the data. Note that the figures have been rounded up.

UG is the larger of the two in terms of student enrollments. Within ten years (2007-2016) total enrollment at UG increased from 28 920 in 2007 to 35 950 in 2016 recording a total student enrollment of 313 419 within the period (see Table 3) while total enrolment at UWC grew from 14 927 in 2007 to 21 796 in 2016 recording a total student enrollment of 185 761 within the same period (see Table 2).

Figure 4 shows that at UWC changes in student enrollment were greater in the years 2009, 2010 and 2016 period than the others. For UG, changes in student enrollment were greater in 2008, 2013 and 2016 than in other years. The lowest changes in student enrollment at UWC came in the 2007, 2008, 2014 and 2015 periods, whereas the lowest changes at UG happened in 2011, 2012, 2014 and 2015. One major difference that characterizes student enrollment at the two universities is that enrollment at UG is marked by monumental fluctuations. In contrast, UWC's is relatively stable, marked by small and moderate changes.

Within a decade (2007-2016), total student enrollment at UG increased by 24 percent (see Table 3). Within the same period, total student enrollment at UWC grew by 46 percent (see Table 2). Notably, within the ten years (2007-2016), UG's student enrollment has grown at a rate of 3.3 percent per year on average, and UWC recorded almost the same average growth rate of 3.9 percent within the same period. UWC's enrollment growth rate per year, on average, was higher than UG by 0.6 percent. The inconsistent changing patterns of public funding had some implications for student access as, in some cases, a reduction in public funding saw some decreases in student enrollment at UWC.

One significant finding in this study is that there are constraints on resources such as space, equipment and, most importantly, funding, which determine the targets for increasing student access. While the universities aim, in accordance with their mission and vision, to increase access, this is not always playing out in the same way the universities wish. It must be stated that it is not surprising that at UWC there is a positive relationship between changes in public funding and student enrollment because the formula for government allocation of funds to the universities takes into consideration student enrollment. For UG, it is not surprising that there is little relationship between changes in public funding and student enrollment because no funding formula exists in Ghana. The universities in Ghana (including UG) use an ad hoc budgeting approach, which does not consider the number of students to be enrolled.

Although the two institutions operate in different contexts, the evidence from this study supports the resource dependence theory's assumption that there exists a link between the uncertainties in funding and the success of organizations. Uncertainties in public funding at the University of the Western Cape seem to have affected student access. This suggests the need for the universities to refocus their initiatives, not just to accumulate extra resources but also to efficiently and effectively manage the limited resources already in place to mitigate the uncertainties.

Implications of Funding Challenges for Student Access

Concerning funding challenges, it has been argued that a prerequisite of providing access to higher education is funding (Omwami & Keller, 2010). Research on student access reveals barriers that hinder access to higher education both at the time of entering higher education from secondary school and throughout their studies (Finnie et al., 2008). In this context, the term *barrier* is defined as the students' inability to afford their tuition fees, and those affected the most are students from low economic backgrounds (Finnie et al., 2008). In practice, barriers are not only limited to students' inability to pay the costs of higher education or funding. Obstacles such as unpreparedness of students to pursue higher education; students inadequately informed of the benefits of higher education; low educational expectations and ambitions; no support for higher education planning; competing family interests and personal uncertainties are just some of the barriers preventing students from accessing higher education (Eggins, 2010).

The important point about the above discussion is that all the issues are linked to the socioeconomic background of the students (Rodriguez & Wan, 2010), in that, lack of financial resources affects both preparations for, the information regarding the application procedure and enrollment requirements (Rodriguez & Wan, 2010). In a related argument, defining student access in terms of financial trends also tends to lean towards inequalities in higher education, especially for students from low socioeconomic backgrounds (Jacob & Gokbel, 2018).

According to Vukasovic and Sarrico (2010), what can financially hinder student access includes entrance examinations. Entrance examinations are usually organized and managed at the faculties of the universities, which come with extra costs for transportation and accommodation for students living in the rural areas and who are

not close to the universities, and it is always a burden for the poor (Pierce, 2016). Moreover, if student access to higher education is analyzed in terms of student retention, then students can experience drop out because of financial difficulties such as the introduction or increase in tuition fees (Terriquez & Gurantz, 2015; Ziderman, 2013), but when it comes to financial barriers, students from the high socio-economic backgrounds are best positioned to compete for limited spaces (Triventi, 2013).

Using the analysis of the financial barriers in another dimension, Johnstone (2009) argued that the most challenging obstacle to student access, especially in low-income countries, is the limited space of public universities and increases in costs of instruction. To overcome this limited space and cost of instruction, Johnstone (2009) explained that adequate financial resources are needed. The crucial financial challenge facing higher education globally and the reason that even the flagship universities suffer financially is that the higher education sector faces yearly increases in the costs (Johnstone, 2014). These increases come about because of improvements in the wages and salaries of the academic staff (cost of instruction) (Johnstone, 2014). Thus, to sustain student access would mean to increase the costs and annual budget of the higher education sector; the latter is usually not met or not forthcoming (Johnstone, 2009).

Moreover, universities usually take management measures to sustain student access in times of decrease in access, for example, measures such as staff downsizing and capping of access, which generally affects students from low-income families (Johnstone, 2009). Johnstone (2014) further argues that students who are the victims of exclusion include those living in rural areas, the ethnically marginalized, and always the poor (Johnstone, 2014).

Globally, it has been documented that prospective students who are likely to have access to higher education, and those who have access to the best opportunities for higher education and are expected to complete are determined by socio-economic status, gender, ethnicity and race (Reisberg & Watson, 2011). Even before the introduction of tuition fees, students from low income families struggle more to pay for living expenses and the ancillary costs of study (books, materials) than students from higher-income families (Reisberg & Watson, 2011). All other things being equal, students from elite families are better positioned to use higher education structures to advance their education, even getting access to the flagship and prestigious universities (Jerrim et al., 2015; Marginson, 2016). Altbach et al. (2009) concluded that after studying fifteen countries, individuals from affluent families are more advantaged than individuals from poor economic backgrounds to access higher education in some countries. In addition to Altbach et al.'s (2009) conclusion, Marginson (2016) postulated that the inequality in socio-economic status reflects in tuition increases and that funding is a strategic opportunity for elite families. It has been revealed that people from the highest income levels have a higher chance of gaining access to higher education. For example, in Egypt, 76 percent of students who have earned access to higher education came from a higher than median income level, compared to only 9 percent of the population from the most deprived quintile (Jaramillo, 2011). Additionally, Soares (2007) found that in 1988–2000, 64 percent of the students of Tier 1 institutions were from the top 10 percent of American families with higher income levels. Altbach et al. (2009) further argued that

challenges like inadequate accommodation, unequal distribution of resources, and distribution of resources along racial lines disadvantage a particular group of people.

In a related argument, Norton (2016) postulated that limited spaces in higher education institutions hinder students' access. He further explained that decline in public funding may lead to overcrowding in lecture halls; restless academic staff; inadequate or outdated library assets; computing capability challenges; internet connectivity problems; and a deterioration of infrastructure resulting in student demonstrations that terminate the completion of the academic year (World Bank, 2010). Therefore, to overcome these challenges, financial resources, which are not forthcoming, are needed to build the lecture halls, laboratory spaces, and residential halls to accommodate the increasing number of higher education candidates from poor economic backgrounds, rural areas, and ethnic minority groups (Johnstone, 2009). National and local institutional behavior comes out as a critical influence in sustaining student access in the face of declining public funding. The next section is a review of various studies on the behavior of national systems and higher education institutions towards shaping changes in student access in the context of inadequate government funding from a global perspective.

CONCLUSION

We have broadly discussed the various funding challenges facing higher education institutions and their implication for student access and attempts by two public African universities to manage relationship difficulties between public funding and student access.

In respect of enrollment targets, the data indicated that UWC was able to meet 2009, 2010, and 2016 annual targets but missed the rest. Therefore, the data showed that over the years (2007- 2016) public funding, and student enrollment at UWC have seen marked disparities in terms of annual changes. Notably, within ten years (2007-2016), public funding to UWC has grown at a rate of 13.1 percent per year on average, whereas student enrollment has grown at a rate of 3.98 percent per year on average compared with the institution's yearly target of 5-10 percent increase. These data show that even though the university appears to be on track in meeting the student enrollment yearly targets, more needs to be done.

In the case of the University of Ghana, the enrollment figures show that the institution was able to meet 2008, 2013, and 2016 annual targets but missed the rest and, in some cases, by large margins. There were marginal yearly increases in 2007, 2009, and 2010 but did not meet the targets. In the 2011 academic year, student enrollment dipped substantially to negative 24 percent from 3.0 percent in 2010. Notably, within ten years (2007-2016), public funding to UG has grown at a rate of 27.13 percent per year on average, whereas student enrollment has grown at a rate of 3.3 percent per year on average compared with the university's yearly target of 10 percent student enrollment increase. Even though the university grew at an average rate of 3.3 percent in student enrollment within a decade (2007-2016), UG did not achieve its annual target of a 10 percent increase. The university does not appear to be on track in meeting the student enrollment yearly targets.

Taking student access to be study places (enrollment) and to address the question of changes in public funding and student access, a quantitative presentation of the performance reveals that the two institutions have seen downward adjustments in public funding even though changes in public funding at UG are more drastic than at UWC. Our study reveals that the two universities saw some upward changes in student access within the period (2007-2016). In terms of meeting enrollment targets, UWC is performing more satisfactorily than UG. However, it must also be noted that UWC's annual enrollment targets are from 5-10 percent compared to UG's 10 percent. Therefore, UWC's enrollment targets are moderate and easier to achieve than UG's enrollment targets. Our study reveals that, in some cases, student access is dependent on the resource capacity of the universities. This implies that resources available determine the quantity of student enrollment, especially at UWC. In this case, we find that the relationship between changes in public funding and student access at UWC was statistically significant from 2007 to 2016, whereas the relationship between changes in public funding and student access at UG was not statistically meaningful.

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