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Knowledge Production and Contradictory Functions in African Higher Education

Edited by Nico Cloete, Peter Maassen and Tracy Bailey

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4 Eccleston Place, Somerset West 7130, Cape Town, South Africa
info@africanminds.org.za
www.africanminds.org.za

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CHAPTER 7

ACADEMIC INCENTIVES FOR KNOWLEDGE PRODUCTION IN AFRICA: CASE STUDIES OF MOZAMBIQUE AND KENYA

Gerald Wangenge-Ouma, Agnes Lutomiah and Patrício Langa

Introduction

This chapter seeks to understand how financial incentives shape academic productivity as measured by academic publishing and the successful supervision of postgraduate students. More generally, we ask the questions: What is the role of incentives in the production of academic core products? And, can they be harnessed by policy levers to promote productivity? The paper draws its data from two countries and two higher education institutions: Eduardo Mondlane University (UEM) in Mozambique and the University of Nairobi (UoN) in Kenya. The case studies examine two important and related aspects; that is, the incentives in place and the remuneration of selected public sectors in Mozambique, to establish how the professoriate is paid compared to other professions, and the incentives at the UoN and how these incentives shape academic productivity.

What drives academics to be more or less productive in their core academic activities – teaching, research and dissemination of their results through publishing? This question is frequently asked, but the answers are far from uncontested. What is most remarkable about them invariably falls into two apparently antagonistic categories. The first category provides answers in terms of the academic ethos of 'publish or perish' – a phrase devised to define the pressure in academia to rapidly and continuously publish academic work to sustain or further one's career. The idea that academics publish their work to pursue peer recognition, in a Bourdieuan sense, is also part of the academic ethos. For Bourdieu, 'each field calls forth and gives life to a specific form of interest, *a specific illusion*, as tacit recognition of the values of the stakes of the game and as practical mastery of its rules' (Bourdieu & Wacquant 1992: 117, original emphasis). In other words, traditionally, academics strive to publish more because

it is part of the rules of the game of academia to compete for recognition through certain output measures, namely, number of followers, citation indexes, postgraduate students and publication in impact-factored journals. The second category of answers suggests that academics are living in an era of academic productivism characterised, in part, by the emergence of the 'evaluative state' – an expression that refers to strong state intervention in the social field of academia, and the liberalisation of the economy (Sguissardi 2006). According to this view, the state gives more freedom to the management of resources and processes such as efficiency and productivity, and can therefore justify a decrease in funding and create conditions for the expansion of privatisation and an entrepreneurial mindset in (higher) education (Langa 2012; Texeira & Dill 2011; Wangenge-Ouma 2008). On the other hand, the state also exerts tight control over the purposes and products of higher education institutions through evaluative mechanisms (Sobrinho 2003) via, amongst others, league tables and funding mechanisms. A key consequence of this state evaluative regime is a new accountability model that puts pressure on academics to produce more.

Our main argument is that academic incentives for knowledge production, particularly in the context of marketisation, constitute a response to the new competitive environment, particularly in the knowledge economy paradigm. That is, the academic incentives regimes for knowledge production are part of a global trend in the political economy of knowledge production and a strategy for resource acquisition and accumulation, namely, students, talented researchers, funding, prestige (rankings), and legitimacy for universities (Wangenge-Ouma & Langa 2010). Academic incentives that are instituted in various higher education and science management systems serve purposes manifest in two main forms: in explicit ways, as in capital investment and productivity strategies where, for instance, universities provide direct monetary rewards for each peer-reviewed publication or masters and doctoral graduate, and then urge academics to increase their levels of production and productivity; and in less explicit ways, where universities establish competitive research funds to promote excellence in research, and strengthen their training of masters and doctoral students. In the latter form, universities usually do not directly pay academics for research productivity but make funds available to incentivise them to increase their research productivity, mainly to enhance institutional prestige, visibility and competitiveness.

Theoretical perspectives on academic incentives

When we started research on the studies reported in this chapter two years ago, the notion of incentives vis-á-vis academic productivity had not populated the internet galaxy as it has today. Jean Tirole had not yet won the Nobel Prize in Economics rewarding his work on, amongst other topics, incentives. In a 2003 paper, Tirole and his colleague, Bénabou, argued that 'a central tenet of economics is that individuals respond to incentives. For psychologists and sociologists, in contrast, rewards and punishments are often counterproductive, because

they undermine "intrinsic motivation"' (Bénabou & Tirole 2003: 489). In their seminal work, Bénabou and Tirole (2003) reconcile these two views, showing how performance incentives offered by an informed principal can adversely impact an agent's perception of the task, or of his own abilities. For the authors, incentives are then only weak reinforcers in the short run and negative reinforcers in the long run. In their study, the two economists asked important questions pertaining to incentives (ibid.: 489):

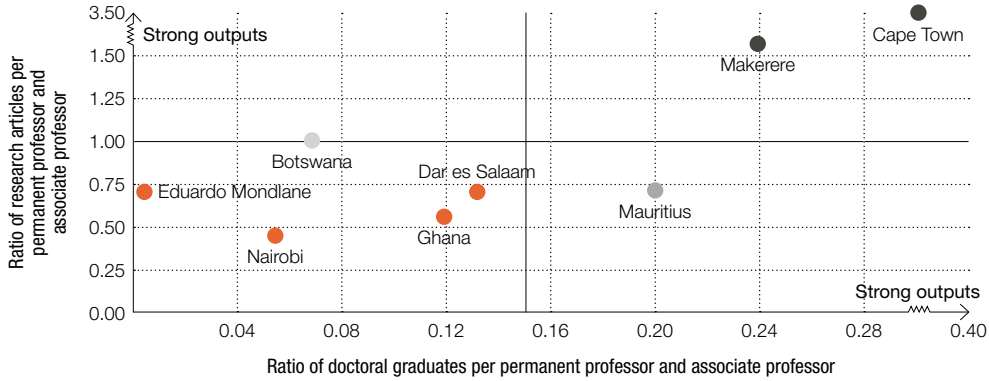
> *Should a child be rewarded for passing an exam, or paid to read a book? What impact do empowerment and monitoring have on employees' morale and productivity? Does receiving help boost or hurt self-esteem? Why do incentives work well in some contexts, but appear counterproductive in others? Why do people sometimes undermine the self-confidence of others on whose effort and initiative they depend?*

In our own research on academic production and productivity, we asked similar questions: Should academics be rewarded for publishing a paper in a journal or a book, or be paid to undertake a research project? Should academics be rewarded to supervise postgraduate students? Is it because of the lack of rewards for undertaking academic core activities that African scholars are, by and large, less productive than their counterparts in Europe, America and Asia? In our research, we examine what drives African academics to engage in or refrain from academic core activities. We are interested in investigating the financial and non-financial rewards and awards practices that are in place to incentivise academics to be more productive. Our focus is directed to the kinds of incentives in place for academics to engage in academic core activities such as research production, training of postgraduates, particularly masters and doctoral students, and dissemination of their research through journal publications. The questions we ask are informed by previous research conducted on the performance of African universities in research as part of the Higher Education Research and Advocacy Network in Africa (HERANA).

Data indicates that institutions like UEM and UoN, when compared to several African peers, underperform in the major 'academic core' activities. For instance, the University of Cape Town tops the rank of doctoral graduates per professor or associate professor, and research articles per professor or associate professor compared with UEM or UoN, which, as shown in Figure 7.1, are placed at the bottom of the first quadrant.

It terms of research publication, the disparity is also significant amongst the eight African universities involved in the HERANA project, including UEM and UoN. This is in line with the common understanding that African universities are lagging behind their counterparts in Europe, America and Asia in terms of knowledge production. For instance, according to Cloete (2014), publications in Africa increased from 11 776 in 2002 to 19 650 in 2008, a growth of 66.9%. Africa's world share increased from 1.6% to 2%, Latin America from 3.8% to 4.9%, and Asia from 24.2% to 30.7%. From 2000–2008, Asia's share of researchers rose from 35.2% to 38.2% and Latin America from 3.0% to 3.8%, while Africa's share fell from 2.2% to 2.1%. If Africa were a country, it would be just behind India, China and Brazil in publication output.

Figure 7.1 Ratios of high-level knowledge outputs to professors and associate professors



Source: Bunting et al. (2014b)

While economic models of compensation treat pay practices as a solution to an incentive problem, classical sociology has established 'disinterestedness' as a core value and norm of the academic enterprise. As such, disinterestedness carries with it the expectation that scientists should have no emotional or financial attachments to their work (Macfarlane & Cheng 2008). Merton (1942) assigned high moral standards of personal integrity to scientists who, he argued, were motivated and rewarded through recognition of their achievements rather than monetary gain. Scientists, according to Merton (ibid.), are interested in finding out the truth even if the truth proves the scientist wrong. For Merton, recognition is a form of intellectual property. Since science puts a premium on originality and on advancing the field, there is intense pressure on 'being first'. This is where the rewards are found; for those who are not acknowledged, their accomplishments are forgotten.

The principal-agent theory offers a counter-position to Merton's postulation on the drive for academic productivity. In a principal-agent relationship, principal(s) with a mission and organisational resources delegate tasks to agent(s) with specialised skills and knowledge to help in achieving certain goals (Eisenhardt 1989; Jensen & Meckling 1976; Laffont & Martimort 2002; Sappington 1991). Theoretically, '(monetary) incentives work by increasing effort which, in turn, leads to an increase in performance' (Bonner & Sprinkle 2002: 304). According to Stiglitz (1987), the main challenge in this regard is devising incentive schemes that will trigger maximum effort by the agent.

The principal-agent model is based on several assumptions: namely, principals are risk-neutral or risk-averse, agents are risk-averse or risk-neutral, and all parties in the principal-agent relationship are rational and utility maximisers; (material) incentives are essential and sufficient to motivate employees' work; and, higher sums of monetary compensation (monetary incentives) yield higher effort (if impossible for the agents to shirk). Importantly, according to the principal-agent model following the rationality assumption, the incentive pay positively affects the agents' effort.

Inherent to this theory is the potential conflict of interest between the principal(s) and the agent(s). The agency problems may arise because each individual actor in the principal-agent relationship acts in his/her own self-interest (Laffont & Martimort 2002: 2). The principal-agent model predicts that based on the notion of conflicting goals and expectations in a principal-agent relationship, the individual agents will shirk (i.e. put no effort into) a task if it makes no contribution to their economic value or is not incentivised (Sappington 1991). The model dictates that the principal will try to reduce the shirking by monitoring the actions of the agents, and by offering the agents incentives in an effort to align the agent(s)' interests with the principal(s)' objectives.

Overall, the principal-agent model suggests that incentives influence the utility of various outcomes, and effort has an effect on the possibility of attaining the outcomes. These notions are similar to the predictions of Vroom's (1964) expectancy theory that individuals will improve their effort to increase their effort if they expect outcomes (incentives) (see also Lunenberg 2011). Bonner and Sprinkle (2002: 308) emphasise that 'incentives, such as monetary [rewards], increase an individual's desire to increase performance and concomitant pay.' Bonner and Sprinkle further claim that the individuals' desire makes them put more effort into the task because more effort is likely to increase performance, and the increase in performance could result in more of the desired incentives. The above influence turns out to be a rotational process. However, empirical findings show contradictory outcomes from the use of monetary incentives (Gneezy et al. 2011). As observed earlier, the influence of money is not as linear and predictable as suggested by Bonner and others.

Applied to academics, we use the model to understand (a) how research-related incentives have shaped research behaviour, and (b) considering that academics tend to have multiple 'principals', who incentivise different outputs (research, consultancy reports, extra teaching, etc.), how the existence of competing incentives, which often require mutually exclusive responses, have affected the engendering of a robust research culture.

The use of this model in a higher education context has to consider its several limitations and implicit assumptions. The main limitation is that the model does not consider the possibility of multiple principals (Ntshoe & De Villiers 2008). Frey and Neckermann (2009: 3) correctly argue that in academic contexts 'there is more than one single clear-cut principal-agent relationship relevant for setting incentives'. Academics tend to have multiple principals simultaneously, namely, the leadership of the university at various levels – from the vice-chancellor to the head of department; the commission(s) of university education; foundations; research councils; professional societies; staff unions; and the scholars in their respective disciplines (Frey & Neckermann 2009; Ntshoe & De Villiers 2008). In this context of multiple principals, there exists the possibility of conflicting interests among the principals and conflicting incentives provided by them, which leads Shapiro (2005: 267) to ask the important question: 'how do agents understand and reconcile duties delegated to them when they are receiving mixed messages and conflicting instructions, as well as incentives from multiple principals?' Other limitations of the principal-agent model include

the assumption of a perfect commitment from both the agent and principal in terms of their interests and goals; a (mis)understanding of pay (incentives) as a linear function of output; and that the agent is committed to doing only one job. The study acknowledges these weaknesses in the analysis.

Methodology

The studies reported in this chapter were part of a bigger research project undertaken at four universities, namely, the University of Cape Town, Makerere University, the UoN and UEM. This chapter reports on some of the results from UEM and UoN. The two case studies utilised different methodologies given their distinct foci. While from UEM we mainly present and analyse quantitative data comparing university salaries with those of other industries, from Kenya we utilise mainly qualitative data to understand the link between competing financial incentives and research productivity. In both cases, we describe the mechanisms in place to reward academics for their work.

Data sources for the UEM case study included the National Strategic Planning for Higher Education (2012–2020), the UEM Research Policy, the UEM Academic staff career regulation, and two research reports, namely, a compilation of *50 Years of Legislation and Policy in Higher Education in Mozambique* (see Langa et al. 2014), and a *Report on the Evaluation of the UEM Strategic Plan 2008–2014*.

As for the UoN case study, data was mainly obtained using a survey and structured interviews with 50 academics and academic administrators (i.e. heads of departments, deans and directors). Only academics who had doctoral degrees, were involved in supervising masters and PhD students, and were engaged in research, were included in the study. The selection criteria were premised on the understanding that since these academics were 'research-active', they were better positioned to provide useful experiential insights on issues of incentives, knowledge production and research funding. Document analysis was also conducted. Some of the documents that were consulted include the UoN research policy (June 2008); the report of the management board committee to review policy on training, promotion and establishment (May 2006); the report of the Kenya Institute of Public Policy, Research and Analysis on wage differentials in the public-private sector (2013); and a Memorandum of Agreement between the UoN and the University Academic Staff Union regarding basic salaries and housing allowances for the academic staff.

Overall, document review for the two case studies involved institutional documents, such as research policies, reports on training and promotion, strategic plans and staff handbooks; documents on collective bargaining agreements on salaries and allowances; and reports from government departments.

Incentives for knowledge production in Mozambique

Over the last two decades, higher education in Mozambique has experienced a dynamic expansion and diversification of institutions of higher learning (Beverwijk 2005; Langa 2006, 2013, 2014). From one institution in 1962, the country now has 18 public and 30 private higher education institutions. In addition to the growth in the number of institutions, the growth in enrolments has also been substantial: from fewer than 5 000 students in 1989 to more than 130 000 students in 2004 (Langa 2014).

The phenomenal growth in the number of higher education institutions and enrolments has unfortunately not been replicated with regards to knowledge production and postgraduate enrolment and outputs. Monteiro (2010) argues that the country lacks a robust research culture that is manifested, amongst others, in low research outputs (see also Bunting et al. 2014) and low postgraduate enrolments. At UEM, which is the largest university in Mozambique in terms of student enrolments, more than 95% of enrolled students are undergraduates (ibid.).

Notwithstanding the current low levels of research productivity, all major policy documents advocate for the need to 'encourage scientific research as a means of training students, solving societal problems and supporting the development of the country' (Langa et al. 2014: 142). The remuneration policy for higher education personnel constitutes a particular strategy advocated by the Mozambican government to encourage individuals to pursue academic careers and enhance research productivity. Related to remuneration vis-á-vis research productivity, the country's *Higher Education Strategic Plan* (2012–2020) emphasises the need to link progression in academic careers to academic and research performance. Equally, the country's laws governing higher education have since been amended (in 2003 and 2009) to provide for, amongst others, performance evaluation for promotions, award of grants, provision of tenure opportunities for staff, among other considerations (ibid.: 188).

In 2006, the Ministry of Science and Technology approved new regulations as part of the country's science and technology strategy that could be regarded as research incentives. These regulations provide the following specific salary supplements for researchers: a 35% exclusivity subsidy of the basic salary for full-time researchers in public research entities or a higher education institution; and a 20% risk subsidy off the basic salary linked to research activities. The regulations also make provision for innovation, scientific discoveries and inventions. According to these regulations, researchers are entitled to a share of the research income that they generate (Langa et al. 2014). However, hardly any of these incentives have been implemented. At the institutional level, the UEM's research policy (2008) makes provisions for research incentives, namely, a fund for rewarding publications in international peer-reviewed journals, and technology innovations; and a fund to support the publication of research results, extension and/or consultancy works in national or international scientific magazines. These incentives have also not been implemented.

Thus, other than the indirect incentives linked to career progression, there are no direct incentives for knowledge production and research dissemination through publications in

the Mozambican higher education system, at either the national or institutional levels. It is through double-teaching (and moonlighting), particularly in the increasing number of private higher education institutions and in programmes with non-state-subsidised (full-fee-paying) students in the public institutions, that most academics can directly supplement their salaries.

This phenomenon has been examined by Mamdani (2007; see also Wangenge-Ouma 2008, 2012) at Makerere University, in what he termed the commercialisation of higher education. The distinction drawn by Mamdani between privatisation, related to the external relationship between the market and the university, and commercialisation, linked to the internal processes of knowledge production in the university, is instructive. Likewise in Mozambique, privatisation is an external relationship between the market and UEM (and other public universities) whereby the university opened up its gates to fee-paying students. Commercialisation, manifested mainly in the full-fee-paying programmes and a pervasive culture of consultancy, has had significant implications for UEM – mainly, the undermining of the possibility of establishing a research culture and the de-institutionalisation of science (Mouton 2008; Mouton et al. 2008). Following Mozambique's independence in 1975, most research took place within public institutions. However, the proliferation of non-governmental organisations (NGOs) during the 1990s has since changed the dominance of public institutions in research. Thus, one of the main features of the de-institutionalisation of research in, especially, public universities is a trend whereby academics establish research NGOs outside of the universities, and then utilise their international networks to secure funding from international agencies. This 'NGO-isation' of science is partly as a result of inadequate academic incentives and rewards, poor salaries and, above all, a deteriorating academic and research environment.

Remuneration of academics

In the Mozambican case study, the basic salaries of academic staff in public universities were compared to those of other professionals in the civil service, in order to test the generally held view that academics in African universities were relatively underpaid, hence the low levels of (research) productivity. The public service professionals whose salaries were compared to those of academics included diplomats and tax and judicial officials. As argued by Altbach et al. (2012), universities are regarded as privileged spaces for the production and dissemination of knowledge, and university lecturers and researchers are important actors in this process. Therefore, one would expect that in a world where knowledge shapes economic development, the academic profession would be highly appreciated and generously compensated.

In this context, we only compared the basic salaries of academic staff in Mozambique with those of highly paid (by Mozambican standards) public sector professionals (see Appendix Table A7.1). Our main conclusion is that, by and large, there are no major differences in terms of basic salaries between the academic profession and the other three selected professions. As shown by Appendix Tables A7.1 to A7.4, the basic salary of a full professor is higher than that

of an ambassador, across all the four salary scales. Generally, the basic salary of academics is better than that of diplomats.

The data in Appendix Table A7.5 is quite instructive. It shows that researchers[1] in public universities and research institutes are underpaid compared to those hired in the teaching track. While the highest paid professor earns a basic monthly salary of USD 1 507.52, his/her equivalent in the research track earns USD 1 020.55, a significant difference of about USD 500.[2] Thus, from a remuneration/incentive point of view, it is more lucrative to follow a teaching track than a research career track. At the UEM, this is evidenced by the fact that out of about 1 700 academic staff, fewer than 100 have taken the research career track. This small number of researchers should not be surprising if, as predicted by the principal agent-theory, would-be researchers as economic agents are utility-maximisers who must 'look out for themselves'. From this perspective, choosing a research career would not be a rational choice.

Incentives for knowledge production in Kenya

Higher education in Kenya has witnessed a number of important developments since 1970 when the country's oldest university, the UoN, became a fully fledged university. Currently, the country has 22 public and 36 private universities. The total student enrolment in the higher education sector has increased significantly: in 2012, the total student enrolment in public universities stood at 240 551, a significant increase from 571 students in 1963 (Nganga 2013). Other important features of Kenya's higher education system include the following:

- State funding of higher education has been declining over the years. Wangenge-Ouma (2008) shows that during the period 1996–2000, government funding of Kenya's university education was about 0.94% of the gross domestic product and declined to 0.74% during the period 2000–2005.
- All public universities have introduced full-fee-paying programmes, mainly to mitigate resource-dependence difficulties arising from inadequate state funding (Kiamba 2004; Wangenge-Ouma 2008, 2012). As in the case of Mozambique, the full-fee-paying programmes entail the admission of students who pay premium fees over and above those subsidised directly by the state. Academics who teach on these programmes receive additional payments over and above their regular salaries.
- Basic salaries are determined at the national level, with the academic unions mobilising the lower and upper limits of the salaries through collective bargaining agreements. Table 7.1 indicates the shifts in the monthly basic salaries of full professors compared to

1 In Mozambique, the academic profession in the public higher education system has two career tracks, namely, a teaching track and a research career track.

2 In comparison to the disparities between the income of senior academics and senior researchers, the difference between junior academics and researchers is negligible.

those of permanent secretaries (administrative heads of ministries) from 1963 to 2014. The comparison with the basic salaries of permanent secretaries is due to a persistent reference by Kenyan academics to the salaries earned by these civil servants as evidence that their (academics') purchasing power has consistently declined over time, while that of the permanent secretaries has significantly increased.

Table 7.1 Average basic salaries of academics and permanent secretaries in Kenya

Year	Professor		Permanent secretary		Paid ratio
	Kenya Shillings	*USD*	*Kenya Shillings*	*USD*	
1963	2 250	35	3 625	42	1.2:1
1973	3 050	40	6 600	88	2.1:1
1980	10 500	140	12 600	168	1.2:1
1990	18 788	250	24 725	329	1.3:1
2004	53 550	714	96 000	1 280	1.7:1
2014	162 064	2 187	200 000	2 667	1.2:1

Source: Lutomiah (2014)

From Table 7.1 above it is evident that there was no significant difference between the paid ratios of the average monthly basic salaries of permanent secretaries and professors over the years – that is, with the exception of 1973 when a permanent secretary earned twice as much as a professor. The claims of the permanent secretaries receiving high salaries is the result of a slate of allowances (house, transport, car purchases and entertainment) and other entitlements that are offered to the permanent secretaries in comparison with the professors. As a result of the huge allowances earned by permanent secretaries, the current wage gap between the monthly gross salaries of professors and permanent secretaries stands at 7:1, hence, the regular claims of poor pay in the universities compared to salaries of other civil servants (Lutomiah 2014).

Regarding knowledge production, while Kenya is ranked among the top knowledge producers in Africa (UNESCO 2010), it remains a low knowledge-producing country. This low knowledge production is evidenced by factors such as low doctoral enrolments and outputs, and low publication outputs. For instance, a study by Cloete et al. (2011) shows low levels of publication outputs at UoN at the ratio of 0.11 per permanent academic staff, implying production of only one article in ten years.[3]

Incentives available to academics

Several incentives are available to academics at UoN. A typology of these incentives is provided below (UoN 2006, 2008):

3 The study considered only articles referenced in the Thomson-Reuters Web of Science databases.

- Direct financial compensation such as pay (basic salaries);
- Other direct financial incentives such as benefits and allowances (sabbatical leave, paid study leave, house allowances), research funding (fellowships and scholarships, travel assistance to conferences), research infrastructure (library resources, equipment, computers and computer software, laboratory and internet), and monetary allowances for publications and successful supervision of postgraduate students;
- Indirect financial incentives such as promotion opportunities; and
- Non-financial rewards such as time resources, advocacy for a balanced workload, and recognition through public acknowledgement.

As the analysis will show, the incentives described above are provided by multiple principals who, not uncommonly, drive mutually exclusive responses. The main principals are: the university itself (also made up of multiple principals – from the vice-chancellor to heads of departments); the national research council; and government and external agencies (mainly NGOs) that regularly engage academics as consultants.

Incentives linked to knowledge production

There are several incentives linked to research and successful masters and PhD supervision at the UoN. These incentives are discussed in the sections that follow.

Promotion opportunities

UoN policy shows that promotion is one of the incentive opportunities attached to research and successful postgraduate student supervision. A review of the promotion policy of UoN and the interview responses show that promotion was largely dependent upon the academic's research productivity and wide experience in postgraduate student supervision, which are evaluated regularly (UoN 2006). Institutional documents show that UoN has five ranks for academic appointment: tutorial fellow/assistant lecturer, lecturer, senior lecturer, associate professor, and professor. According to institutional documents, the university has clear criteria for promoting staff (ibid.: 8). For promotion to a professorial position, PhD training is a key requirement. Teaching is also an important criterion, which may involve teaching at undergraduate and postgraduate levels, research training and mentoring. Similarly, there is an emphasis on postgraduate student supervision, where the candidates need to have successfully supervised to completion a minimum of three PhDs and five masters students. Research publishing is also a key factor insofar as the academic has to have produced a minimum of six publications in refereed journals, or three publications in refereed journals and three chapters in scholarly books, since the previous promotion. Lastly, evidence of scholarly activities or contribution, such as innovations, is also rewarded at the university (UoN 2006).

While the policy document mentions several outputs that are considered for promotion

to full professorship, the academics interviewed stated that much emphasis during promotion is on peer-reviewed articles in internationally recognised journals. Significantly, respondents reported that co-authorship with postgraduate students is strongly emphasised for promotion. To reinforce the above requirement, an academic staff member in the Faculty of Arts reported that:

> *I would say that one of the challenges that I had during the interviews [for promotion] is that I had not published any publications with my students. So the committee highly regards co-authorships and we are being encouraged to do that. (Interview, November 2012)*

The emphasis on publications and the successful supervision of masters and doctoral students for promotion purposes seems to have encouraged academics at UoN to pay more attention to these outputs. A dean in one of the faculties expressed his view as follows:

> *Since the time that promotion was attached to student supervision – recently, just three years ago – it has led to academics scrambling for students in my department and to be available for consultations on the research projects. (Interview, November 2012)*

Inasmuch as promotions were considered to be an important driver for performance, about half of the participants interviewed felt that the promotion system was not transparent, consistent or fair, and that it took too long for one to be promoted, despite having achieved high-performance ratings and met the promotion criteria.

Based on the above analysis, notwithstanding the weaknesses mentioned in connection with promotion opportunities, there is compelling evidence that promotions to senior levels at UoN are based to a great extent on research productivity. From the interviews, it can be argued that this incentive has triggered positive responses from academics with regards to the supervision of postgraduate students and publishing refereed papers.

Financial allowances for successful supervision and publications

Inasmuch as the review of policy documents shows that the university will set aside a budget for incentives for research and supervision, it is not explicit in the documents if financial allowances are directly attached to publications and the successful supervision of postgraduate students. However, from the interview data discussed below, it can be concluded that in some instances financial allowances are attached to research publications and supervision.

Generally, respondents interviewed believed that supervision at the university was seen as a de facto responsibility of academics and thus no rewards need to be attached to it. However, there were some cases where financial rewards were attached to successful supervision of masters and PhD students, particularly in the full-fee-paying programmes (Module II programmes). One of the deans interviewed stated that:

> *The staff are rewarded when they are supervising Module II students, who are tuition-fee-paying. This faculty has not developed a PhD programme that is self-sponsored – we are still on the old programme [Module I], but for the masters we have developed parallel programmes. Various departments have developed masters programmes that are self-sponsored, where students pay for supervision and the lecturer gets 30% of the total of the supervision fees. (Interview, November 2012)*

The rewarding of successful supervision of students in Module II programmes did not seem to be a university-wide practice, but one that was specific to particular faculties and departments. The provision of financial rewards for successful supervision was also practiced in cases where student funding (by external sources) provided for a financial allowance for supervision.

Other than the fact that rewards for successful supervision of postgraduate students were not systematically applied across the institution, academics expressed the view that the amounts for this reward were minimal and therefore did not have a useful impact on productivity levels. Respondents generally regarded the amount as a token, and as a lecturer in the Faculty of Arts complained: 'The amount is too low to motivate anybody; it is miserable and has an insignificant impact.'

The National Commission for Science, Technology and Innovation has established a financial reward, ranging from USD 50 to USD 200, for academic researchers who publish their research in international peer-reviewed journals. This reward is only attached to full peer-reviewed journal articles, while other publications such as books, book chapters, editorials, comments and editor's notes are not recognised. There was no evidence of direct financial rewards by the university itself for publications.

Recognition for successful supervision and publications

The other incentives linked to research included non-monetary rewards such as recognition. Recognition may entail recognition through an outstanding researcher award at a departmental level; recognition through appointment to the professor emeritus position; and/or pronouncement of names in public, such as during graduation ceremonies. Following the recognition in public, their scholarly works similarly earn them recognition amongst their peers and students as well, which also comes with improved status and respect. A professor in the Faculty of Agriculture acknowledged this enhanced status following the public recognition of his research productivity thus: 'There are changes in the way the students see me as a professor; for instance, you see students and my colleagues being more receptive with my suggestions and criticisms than when I was a lecturer.'

Perceptions of academics towards the UoN research incentive regime

The general perception of academics was that the existing research incentive regime at UoN was weak, discontinuous and unsystematically applied. For instance, regarding promotions,

participants in the study argued that the procedures were unfair and influenced by 'politics' in the university, rather than the set criteria. As for incentives derived from Module II programmes, their application depended on the amount of revenues generated by individual programmes or colleges and, therefore, did not consistently influence desired responses. Monetary rewards attached to publications and supervision were said to be 'too little' to have a meaningful impact.

UoN academics also pointed out that inasmuch as key incentives such as promotion were linked to research publications and the supervision of PhD and masters students, research funding and heavy teaching remained a key challenge in the university. As promotion is heavily dependent upon research productivity, heavy teaching workloads (partly motivated by financial gain from Module II programmes) and inadequate research funding militates against a productive research enterprise. On the whole, while the university rewards research productivity, it had not established sufficient conditions that would encourage the maximisation of its research goals.

Competing incentives

The notion of competing incentives is derived from the understanding that academics tend to have multiple principals (Frey & Neckermann 2009; Ntshoe & De Villiers 2008), who, not uncommonly, reward different outputs such as research, consultancy reports or extra teaching. Responding to multiple principals and incentives may conflict with the incentives meant to reinforce research behaviour. Depending on the attraction to the different incentives, academics may focus on other activities that might not contribute to the mission areas of the university as intended by university principals. The data collected shows that apart from the research-related incentives provided by UoN, competing incentives existed that may not necessarily reinforce research behaviour. As discussed already, UoN academics work within an environment where multiple principals, including the university itself, the research council and the government, make attempts to reward research, although they are largely perceived to be inadequate. The same environment simultaneously rewards teaching on the Module II programmes handsomely and provides academics with consultancy opportunities. Unlike research incentives that seem uncertain and take long to materialise (e.g. through promotions), the competing incentives are fairly easy to earn. In this context, UoN academics often have to make 'trade-offs' in terms of which incentives to respond to. Some of these issues are reflected in the quotations below:

> *So you are paid so little, then there is no research money and the challenges of time. So what is really an environment conducive to working? Here we are employed for two things: we teach and do research. But there is no research money and the salary for teaching is very small. So we go out to look for our own income through consultancies and teaching on Module II which tend to be attractive. (Interview, November 2012)*

> *There are some people who teach evenings from Monday to Saturday … these are some of the people who may opt to teach and not do any research. And there is an attraction there because when you teach Monday to Friday you are assured of that money; when you refuse to teach and go out looking for either research money or consultancy, it's risky because you are not sure … since this is money that is assured they [academics] will want to teach more. (Interview, November 2012)*

From the above interview extracts, it appears that given the weak nature of research-related incentives, academics were attracted to other (non-research) incentives offered to them. It would seem that, contrary to Merton's postulation that scientists should have no emotional or financial attachments to their work (Marcfarlane & Cheng 2008), academics, like other economic agents are, after all, utility-maximisers who make 'rational' choices that are mostly guided by opportunity cost.

While UoN academics were making significant additional income from extra teaching on the full-fee-paying stream in the university, and also by moonlighting in private and other public universities, it also means that they were taking up heavy teaching loads. In this context, intensive research required for publishing in international peer-reviewed journals and postgraduate supervision becomes a poor competitor against extra teaching and consultancy.

Concluding observations

How incentives work, and how they can be utilised to achieve intended results, remains a contested issue. From an economic point of view, from which the principal-agent theory is derived, individuals respond to incentives. In other words, incentives can be used to trigger and sustain desired behaviour. However, this reward-driven influence on desired responses is regarded by some as undesirable, counterproductive and unsustainable (Bénabou & Tirole 2003). In a higher education context, the pursuit of science driven by external rewards, especially monetary rewards, is considered by some as anathema; as going against the traditional values of science (Macfarlane & Cheng 2008; Merton 1942). However, as our two case studies have shown, the pursuit of monetary rewards in academia is a reality and has implications for the advancement of core academic activities, namely, teaching, supervision of postgraduate students and research.

In Mozambique, our analysis has shown that while the remuneration of academics is generally on a par with, and in some cases better than, that of senior professionals in the public service, no direct incentives were provided to encourage research, even though existing policies provided for such incentives. What is instructive about the UEM case study is that, contrary to the common perception regarding the poor remuneration of African academics, Mozambican academics were actually competitively remunerated by Mozambican standards. However, as our analysis has shown, there seems to be no correlation between the competitive

remuneration of Mozambican academics and research productivity. Instead, and similar to the UoN case study, we see academics being attracted to more teaching, driven, of course, by financial rewards.

An important observation in the UEM case study is that responding to the often conflicting interests of multiple principals could have perverse implications for weak higher education institutions. This is exemplified by the de-institutionalisation of science at UEM whereby, for example, instead of pursuing research within the university and providing opportunities for socialising junior academics and postgraduate students into research, senior academics seem to prefer establishing entities outside of the university, which they use as vehicles to attract funding for research and consultancies. It can be argued that in this case, incentives for research (from international agencies) are applied in ways that, in fact, obviate its advancement in an institutional sense.

The key observation from the UoN case study is that there are competing incentives at the university that are provided by different principals: the university itself, the national research council, NGOs and other entities that offer consultancy opportunities to academics. These principals incentivise the production of different outputs, such as teaching on Module II programmes, publication of papers in international peer-reviewed journals, successful supervision of postgraduate students, and writing of consultancy reports. While the university places a premium on research and postgraduate supervision as evidenced in the promotions criteria, the existing incentives seem to encourage more teaching at the expense of research. This situation brings to the fore an important question posed by Shapiro (2005: 267), which is: How do agents understand and reconcile the duties delegated to them when they are receiving mixed messages and conflicting instructions and incentives from the multiple principals?

Thus, as a 'principal', UoN has not been successful in establishing an incentives regime that simultaneously encourages teaching and the maximisation of the university's research goals. As the analysis has shown, the general perception of UoN academics is that the incentives, especially those pertaining to research, are inadequate, discontinuous and not systematically applied across the university. The privileging of teaching over research should, however, be understood in the context of the university's key organisational goal of mitigating resource-dependence difficulties resulting from declining state funding. Students, through the Module II programmes, constitute the university's primary market for generating income and ensuring organisational survival. The pursuit for organisational survival has led to over-enrolment of students beyond the university's existing capacity (Wangenge-Ouma 2008, 2012), meaning that most of the university's academics have teaching commitments throughout the year. The privileging of teaching seems to make sense from a resource-dependence perspective: the university needs resources in order to exist as an organisation that can, amongst others, pursue research. So far, these resources have been derived from teaching.

Overall, from the two case studies it can be argued that while the existing incentives for research are weak and 'crowded out' by other incentives, especially those for teaching, it would

also seem that the existing conditions at the universities (such as heavy teaching loads) do not encourage a thriving research culture. Thus, while incentives can be utilised to leverage research productivity, their success seems to require the presence of an institutional culture that supports research actively – be it through a consistent application of the promotions criteria, mentorship of young academics to become established researchers, research capacity-building, and/or the provision of research funding.

An instructive observation from the two case studies is the weak participation of the state in supporting and encouraging research by making resources available. Ironically, in both cases, national policy documents talk about encouraging research and utilising knowledge to advance the respective countries. This weak participation of the state in supporting research is indicative of the absence of a primary 'principal' for research in both countries. As a consequence, it is not surprising that existing incentives for research from the multiple principals are inadequate, fragmented, and are applied, as shown in the case of Mozambique, in ways that actually weaken the research enterprise in higher education institutions.

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Appendix tables

Note: Amounts calculated according to Mid-Market Exchange Rates (as at 2013-08-11 08:58 UTC): MZN 1 = USD 0.0338639; USD 1 = MZN 29.5300

Table A7.1 Basic salaries of academic staff (2013) (in USD)

	Range			
Category	*1*	*2*	*3*	*4*
Full professor	1 345.41	1 394.04	1 448.09	1 507.52
Associate professor	1 021.23	1 064.44	1 102.27	1 150.90
Assistant professor	842.91	869.93	907.76	940.16
Junior lecturer	653.81	675.42	697.02	713.24
Teaching assistant	540.33	639.05	632.21	–

Source: www.meusalario.org

Table A7.2 Basic salaries of professionals in diplomatic careers (2013) (in USD)

	Range			
Category	*1*	*2*	*3*	*4*
Ambassador	1 297.08	1 332.27	1 372.50	1 412.69
Plenipotentiary Minister	1 085.91	1 116.08	1 151.26	1 186.48
Counselor Minister	909.95	935.11	965.25	990.41
Counselor	759.12	784.28	804.40	829.52
First Secretary	638.46	653.57	673.68	693.76
Second Secretary	568.10	583.16	598.27	618.38
Third Secretary	502.74	517.81	532.91	547.98

Source: www.meusalario.org

Table A7.3 Basic salaries of professionals from the tax authorities (2013) (in USD)

	Range			
Categories	*1*	*2*	*3*	*4*
Higher Tax Officers				
General Tax Commissioner	1 522.21	1 550.45	1 578.69	1 606.94
Tax Commissioner	1 292.85	1 321.09	1 349.33	1 377.58
Tax Sub-Commissioner	1 127.56	1 184.01	1 184.01	1 218.35
Tax Superintendent	1 022.18	11 050.42	1 078.63	1 106.87
Tax Officer (technician)				
Tax Inspector	870.64	905.07	939.51	973.95
Tax Sub-Inspector	709.44	751.47	793.49	835.48

Source: www.meusalario.org

Table A7.4 Basic salaries of professionals in the judicial system (2013) (in USD)

Categories	Range		
	1	*2*	*3*
Judiciary			
Taxation Judge	1 885.37	1 948.66	2 009.87
Judge A	1 138.80	1 202.09	1 265.35
Judge B	974.33	1 037.58	1 100.84
Judge C	822.48	885.74	949.03
Judge D	657.97	721.26	784.52
Magistrates (Public Prosecutor)			
Deputy Public Prosecutor	1 885.37	1 948.66	2 011.92
Public Prosecutor	1 138.80	1 202.09	1 745.00
Public Prosecutor 1st Class	974.33	1 037.58	1 202.43
Public Prosecutor 2nd Class	822.48	885.74	949.03
Public Prosecutor 3rd Class	657.97	721.26	784.52

Source: www.meusalario.org

Table A7.5 Basic salaries of researchers in public universities and research centres (2013) (in USD)

Category	Range			
	1	*2*	*3*	*4*
Research coordinator	904.94	940.12	980.35	1 020.55
Principal researcher	774.22	804.40	839.58	869.75
Researcher	663.63	688.75	713.88	744.05
Junior researcher	563.08	588.21	613.34	638.46
Research assistant	502.74	522.85	542.97	563.08

Source: www.meusalario.org