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A Reflection on the Unintended Consequences of Promoting Research and Publication Using Monetary Incentives

Abstract

Publishing scholarly material is a longstanding responsibility of researchers and scholars. Traditionally, publishing scholarly material has been for public good, and for advancement of scholarship in specific disciplines. This piece of *Briefly Speaking* contends that when the reason for publishing is shifted to monetary gain, as it has since the introduction of the research incentive funding, then researchers and scholars become no different from the producers who sell their products at a market place for profit. This often results in the displacement of academic values, ethos and good practices by 'laws of the market place' which include producing more output with less resource inputs, rationalising processes to gain more production efficiencies, competition, and using any available avenue to make more in monetary gain – gaming the system. Applying these laws of the market place in the research and publication environment may result in phenomenal increases in research outputs. However, the quality may start to be compromised, and the value of research to advance knowledge generation and application for the good of society, may start to diminish. It also risks creating scholar-writers and publishers for hire. This piece of *Briefly Speaking* discusses these issues as the unintended consequences of promoting research and publication using monetary incentives.

Keywords: Gaming, higher education institutions, incentives, research, scholarly publication, subsidy

Introduction and background

This *Briefly Speaking* looks into how the *Research Output Policy* (DHET, 2015) is being implemented and the implications thereof. This policy, like the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003), which it replaced, seeks to promote research productivity in public higher education institutions by rewarding research outputs in the form of articles published in recognised scholarly journals, published scholarly books and/or book chapters, and published conference proceedings. Rewarding the research outputs takes the form of allocating and disbursing research subsidy or incentive funds to the public higher education institutions for the research output units published annually.

It is important to note that the practice of rewarding research outputs of higher education institutions in South Africa by means of monetary incentives did not start with the *Research Output Policy* (DHET, 2015), nor with the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003). It was rather introduced in the late 1980s, and since its inception, it has been a subject of intellectual debates. During the

twilight years of apartheid, the discourse was of an ideological nature (Byrne, 1996; Tomaselli *et al.,* 1983). However, in response to new policy initiatives after 1994, the system garnered much legitimacy under the new post-apartheid government (Vaughan, 2015). Questions about the intention, implementation, failures and successes of the research subsidy funding continue to be asked in certain quarters by scholars (see for example, Baijnath, 2019; Harley *et al*, 2016; Lee and Simon 2018; Nadar and Pillay 2024).

Annually, each public higher education institution submits to the Department of Higher Education and Training (DHET) data and information about units of articles researchers and scholars in the institution had published in recognised scholarly journals, scholarly books and book chapters, and peer-reviewed conference proceedings. The relevant formulae are then applied to calculate the amount of incentive funding to be allocated to the institution. The main factor that weighs heavily in the formulae is the numbers of units of articles researchers and scholars in the institution had published in recognised scholarly journal, scholarly books and book chapters, and conference proceedings. In other words, it is the quantity that counts, more than anything else. For institutions whose researchers and scholars produce large quantities of units of published scholarly journals, scholarly books and book chapters, and peer-reviewed conference proceedings, the amounts received in the research subsidy incentive funding is significant and constitute considerable proportions of their total annual incomes. Public higher education institutions basically consider it as a significant state funding stream.

Each year, once the research incentive funds are disbursed to each institution, the institution then applies its own specific resource allocation policies in disbursing these amounts internally. Most universities allocate portions of the incentive funds to paying for management and administrative overheads, and to paying emoluments for post-doctoral fellows, research associates and other affiliates. Most higher education institutions allocate varying percentages to the 'research cost centres' of the individual authors of the respective research outputs. Some, against the spirit of the *Research Output Policy* (DHET, 2015), and the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003) before it, permit a portion to be claimed as taxable take-home pay. Only two public higher education institutions require authors to apply for the use of funds earned from their publications, from the general central funds. Therefore, despite the *Research Output Policy* (DHET, 2015), and the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003) before it, clearly stating that the research incentive funding is for institutions, and not for individual authors or academics, institutions have nevertheless put in place, and they implement institutional policies that allow for the individual researchers, scholars and academics to benefit in one way or another, from the incentive funds allocated for their respective research outputs.

Uninteded consequences

There is no gainsaying that the intention of both the *Research Output Policy* (DHET, 2015) and the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003), was a noble one. The intention was to promote research and publication by rewarding outputs so that the funds earned could be used by institutions to invest more in research capacity and infrastructure, which would, in turn, spur further research work and the generation of more scholarly publications. On this count, all evidence points to the fact that the implementation of the policy has resulted in the rapid increase in research outputs generated by public higher

education institutions. As Figure 1 below illustrates, between 2005 and 2022, for example, the quantity of research outputs generated by public higher education institutions increased from 6 661.90 to 20 017.25, which is a more than 200% increase. By all accounts, this is a phenomenal rate of increase in scholarly publications.

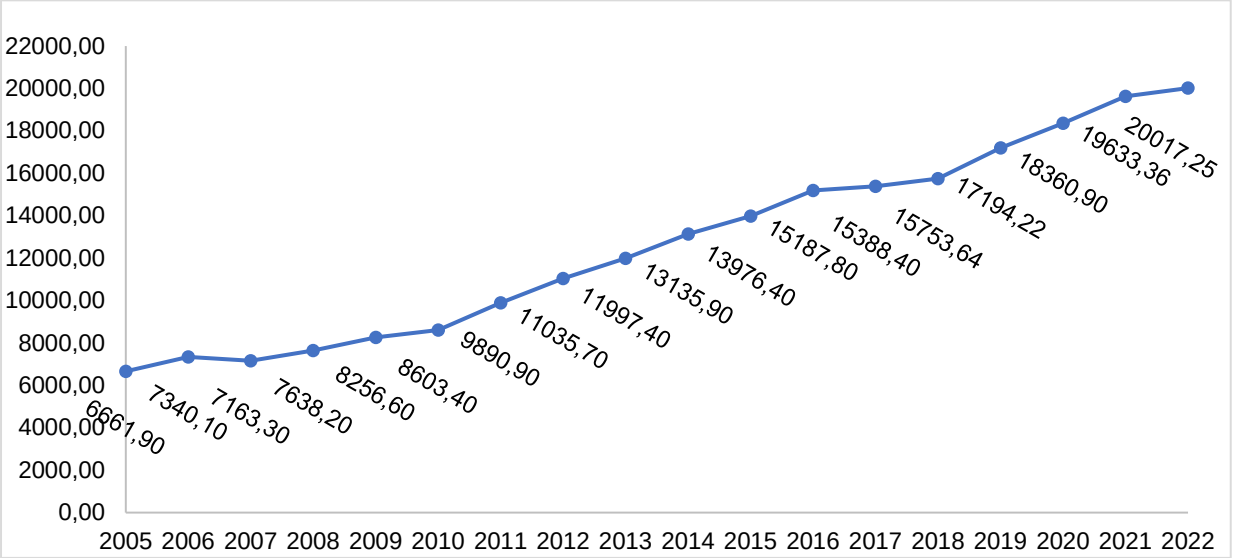

Figure 1. Line Graph Portraying the Growth Trajectory in Research Subsidy Units: 2005 – 2022. (CREST 2024)

The above notwithstanding, there have also been some unintended consequences. These include compromising quality of research outputs, corporatisation of the governance and management of research and publications, maintaining the chasm between historically advantaged and disadvantaged institution, disregarding the contribution of other role players in the research value chain, and engendering contradictions within the state research promotion environment. These are discussed in the ensuing sections.

Compromising quality of research outputs

Public higher education institutions have mainstreamed the research incentive funding into the internal structures of their research management, resource allocation, and institutional-level of rewarding researchers and academics for publication and for successful supervision of master's and doctoral degree theses. Institutions are increasingly scrambling for significant portions of the research incentive funds available each year at the national level. Effectively, institutions are fiercely competing for sizeable shares of the annual national budget of the research incentive funds, which is overseen by the DHET. This competition has resulted in unrelenting institutional pressures being exerted on academic staff, research students, postdoctoral fellows and even administrators to engage in publication in order to secure for themselves big slices of this research output subsidy income, to complement the annual block grant allocations from the state.

The pressure has entrenched a culture of 'publish' or 'perish' in academia, and those researchers, scholars and academics who fear perishing, have looked into ways and means of increasing their research outputs. Some of the ways and means available are not above board and might stand contrary to ethics of research and publication. The snowball effect of this increasing tendency is manifested in an inverse relationship between research output and quality. As a result, the extraordinarily increasing quantities of research output per capita, is accompanied by a noticeable steady decline in the quality of such outputs as measured by citations and impact factors, and by retractions, for example. The data generated by the Centre for Research, Evaluation, Science and Technology (CREST) at Stellenbosch University on behalf of the DHET, confirm that while the quantity of published outputs has been increasing, the quality of the material published has been deteriorating (Mouton and Valentine, 2017; Veldsman *et al*., 2019). It may therefore appear that there has been, and there continues to be, some unethical gaming of the system by some institutions and authors of publications. This is happening notwithstanding the regular audits commissioned by the DHET and undertaken by CREST. These audits have been presented at the annual National Scholarly Editors' Fora (NSEF) and at consultative meetings with senior research officials in higher education institutions. The means, methods and mechanisms leveraged by individual authors, some editors, some publishers and some universities to opportunistically exploit the initially well-intended research output incentive programme have been, and are continuously being measured, tracked and recorded in the huge database maintained by CREST.

Corporatisation of the governance and management of research and publications

Some scholars argue that the unethical gaming of the system was inevitable because the *Research Output Policy* (DHET, 2015), and the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003) before it, are anchored in neoliberal ideology (Beiter, 2019; Muller, 2016). Loosely defined, neoliberalism entails the development and implementation of market-oriented reform policies, characterised by reducing the influence of state in an economy through privatisation and other 'austerity measures'. Neoliberalism encourages market competition in which success is measured as returns on investment. In higher education, it encourages competition between and among institutions. It equally encourages competition between and among individual researchers or scholars within the same institution. The returns in investment are measured by the amounts of research incentive funding earned, amounts of donor funding secured, and amounts of other funds raised by the researchers or scholars. Within this environment, the state's research incentive funding ironically becomes the substitute for private market; higher education institutions, students, researchers and scholars become producers; and publications produced and qualifications conferred become products that are 'rewarded' by the state subsidies, including the research incentive funding. Such a neoliberal environment contributes to the erosion of self-governance and collegiality within higher education institutions, causing artificial underfunding of, and hypercompetition in, science and other academic practices (Beiter, 2019).

Universities operating in a neoliberal macroenvironment replace the principles of collegiality and consultative decision-making with an inalienable top-down line-management that exhibit opaque decision-mechanisms. Similarly, they adopt a

'business' approach to production, and to the measurement of the performance of employees – academics, researchers and scholars (UNESCO, 1997). Performance management becomes a form of output regulator through which the performance of the individual academic, researcher or scholar, is audited in terms of discrete and easily measurable productivity units, instead of being holistically evaluated in terms of their respective contributions towards the realisation on institutional objectives, visions and missions. Good performance is reduced to producing outputs that meet or exceed the targets set in the annual business plan or annual performance plan, in the same way that corporates evaluate their performance in terms of return on investment or profit margin targets. Good performance is rewarded with performance bonus payouts, promotion, and granting of research leave. Furthermore, in making decisions for investment into research, priority is accorded to fields of research that have quick turn-around times so than within short periods of time, the research projects in question would have yielded sizeable quantities of publications that would then bring in income in the form of the research output subsidy. Research activities that are likely to take long before outputs are produced are less prioritised, and so is fundamental or blue-sky research because, not only does such research take long to produce outputs, but also there are very few scholarly journals that publish articles on such type of research. The end result is that higher education and research are instrumentalised towards generating income for higher education institutions and individual researchers, scholars and academics. The goal of nurturing civil responsibility is being displaced by a corporate culture that considers individual researchers, scholars and academics as productivity units (Beiter, 2023).

Whereas the national research system was designed to build national synergetic capacity and quality (ASSAf, 2006; Vaughan, 2008), under the research incentive funding programme, publication is instead measured by the authorities in higher education institutions as a discrete productivity function, as a bottom-line income generator, and as a means towards balancing the books. This corporatisation of the institutional research management, and the measurement of symbolic value as a monetary unit (Muller, 2016), have partially weakened the national policy objective that aims at scholarly quality, relevance, social impact and public benefit. Internal publication reward systems devised by different higher education institutions, drawing on the national research incentive mechanism, tend to mimic the ways that a corporation operates. These internal publication reward systems are not underpinned by age-long conventions of science and scholarship (Muller 2016, 2021; Kuhn, 1996).

Maintaining the chasm between historically advantaged and disadvantaged institutions

The market place laws are globally blamed for creating, sustaining and exacerbating inequality. Contrary to Adam Smiths' economic tenet that market place forces can lead to the 'trickling down' of wealth to the less privileged, the reality is that, quite often than not, the market forces lead to accumulation among those who have much, and to more deprivation among those who have little, or nothing at all (Arndt, 1983). In the same manner, rewarding research output *per se* means that higher education institutions that have established research capacity and infrastructure or facilities will cumulatively earn more in research output subsidy than those higher education institutions that are developing and growing their research capacity and infrastructure from lower bases. Therefore, the research incentive funding is likely to continue benefitting more the research-intensive public higher education institutions, than historically disadvantaged and new higher education institutions. The latter have to develop research capacity and infrastructure, or facilities, from

scratch, and these cannot be developed overnight. The 'waiting period' for them before they can become forces to be reckoned with in the competition for sizeable slices of the research output incentive funding, could be decades. During those decades, institutions with research capacity and infrastructure in place, would have cumulatively increased the size of their slices of the research output incentive funding.

Table 1, confirms, using recent publication data, that none of the historically disadvantaged public higher education institutions contributes a significant proportion of the total scholarly publications produced in South Africa. The one historically disadvantaged higher education institution that performs better, in terms of research outputs, than others in that category, contributed only 2.82% and 2.80% of total scholarly publications produced by higher education institutions in 2021 and 2022 respectively. On the other hand, the contribution of historically advantaged higher education institutions to the total scholarly publications produced in 2021 ranged from 9.04% to 12.41%, and in 2022 it ranged from 8.7% to 11.8%. These statistics indicate that there is a significant gap between the historically advantaged and historically disadvantaged higher education institutions with respect to research outputs recognised for subsidy. Considering that the rewarding of research outputs using monetary incentives has been going on for more than three decades, and considering that the gap between the historically advantaged and historically disadvantaged higher education institutions with respect to research outputs, is still wide, it is difficult to avoid concluding that the research incentive programme does not do much to bridge the gap between the historically advantaged and historically disadvantaged higher education institutions. Instead, it might be considered as a factor that contributes to the continued existence of the gap between the historically advantaged and historically disadvantaged higher education institutions.

Table 1: Year-to-year Comparison of Units Journal Publications per University

Year to year comparison of journal publications						
	2021		2022			
Institution	No. of Units	% of Total	No. of Units	% of Total	Difference	% Growth
CPUT	290,42	1,48%	275,2106	1,4%	-15,21	-5,24%
CUT	128,93	0,66%	148,2104	0,7%	19,28	14,96%
DUT	358,16	1,82%	460,9942	2,3%	102,83	28,71%
MUT	55,17	0,28%	78,0837	0,4%	22,91	41,53%
NMU	485,88	2,47%	468,307	2,3%	-17,57	-3,62%
NWU	1366,26	6,96%	1342,095	6,7%	-24,16	-1,77%
RU	471,59	2,40%	454,4945	2,3%	-17,10	-3,63%
SMU	237,69	1,21%	228,67	1,1%	-9,03	-3,80%
SPU	35,88	0,18%	39,9483	0,2%	4,07	11,35%
SU	1774,54	9,04%	1750,5181	8,7%	-24,02	-1,35%
TUT	246,81	1,26%	390,0329	1,9%	143,23	58,03%
UCT	1534,42	7,82%	1514,2384	7,6%	-20,18	-1,32%
UFH	194,21	0,99%	255,1466	1,3%	60,93	31,37%
UFS	1015,67	5,17%	1020,3773	5,1%	4,71	0,46%
UJ	2006,49	10,22%	2359,6458	11,8%	353,15	17,60%
UKZN	2436,71	12,41%	2343,0419	11,7%	-93,67	-3,84%
UL	515,24	2,62%	416,5429	2,1%	-98,70	-19,16%
UMP	52,65	0,27%	50,1119	0,3%	-2,54	-4,82%
UNISA	1202,81	6,13%	1290,0311	6,4%	87,22	7,25%
UNIVEN	109,13	0,56%	308,3237	1,5%	199,19	182,53%
UNIZULU	198,93	1,01%	187,9218	0,9%	-11,01	-5,54%
UP	2036,00	10,37%	1884,8999	9,4%	-151,10	-7,42%
UWC	553,50	2,82%	552,7264	2,8%	-0,78	-0,14%
VUT	106,27	0,54%	101,2659	0,5%	-5,00	-4,71%
WITS	2046,33	10,42%	1822,3556	9,1%	-223,98	-10,95%
WSU	173,65	0,88%	274,0543	1,4%	100,40	57,82%
TOTAL	**19633,36**	**100,00%**	**20017,25**	100,0%	383,88	1,96%

The previously disadvantaged public higher education institutions cannot compete effectively and fairly with the previously advantaged higher education institutions because the playing ground is not level: the latter have well-established research capacity and infrastructure while the former are developing research capacity and infrastructure. Ironically, because the previously disadvantaged public higher education institutions do not earn huge amounts, relative to the previously advantaged public higher education institutions in research subsidy funds, their levels of annual investment into research capacity and infrastructure or facilities is not that substantial. They are in a vicious circle and, therefore, they are likely to continue lagging behind the historically advantaged public higher education institutions regarding research outputs.

It is worthwhile noting that in the table above, most of the historically disadvantaged public higher education institutions have higher positive growth rate in units of scholarly journal publications produced, compared to the previously advantaged public higher education institutions. This is because the growth rate was calculated using their very low bases, in this case their outputs for 2021.

Disregarding the contribution of other role players in the research value chain

The research and scholarly publication value chain within the higher education sector includes role players such as the DHET, the higher education institutions, researchers and scholars, peer reviewers, journal editors and publishers. As illustrated in Figure 2, the

research incentive funding recognises the higher education institutions (universities) and the authors of publications as the producers of the research outputs. However, the research output incentive funding programme does not recognise the roles played by peer reviewers, editors and publishers in the research and publication value chain. With the persistence of a culture of 'publish or perish', many researchers and scholars work hard to produce and submit manuscripts to journals, and only a few have spare time on their hands to work as peer reviewers, particularly when the review work is not recognised for the research publication incentive funding (ASSAf, 2006; Gevers *et al*., 2006). Therefore, the burden of peer reviewing manuscripts now falls on a relatively small number of academics, while authors are submitting huge volumes of manuscripts for consideration. The shrinking pool of reviewers can hardly do full justice to the huge volumes of manuscripts submitted to many journals. When the peer reviewers are not able to do their work effectively because of the workload and the absence of incentives, the quality of the publications is compromised. Consequently there would be a decline in the quality of publications, as well as what Muller (2021) calls 'facsimile research and publication'.

Similarly, editing of scholarly journals is not recognised as work that contributes to the generation of scholarly publications (Whalley, 2024) and yet, the scholarly journals that they edit are the largest conduit for the publications that are rewarded through the research incentive funding. Although the work of editing journals does not qualify the editors for any research subsidy, their work is increasingly becoming more demanding in light of the periodic ASSAf audits and continuous monitoring by CREST on behalf of DHET (Tomaselli, 2018). Furthermore, in the age of artificial intelligence (AI), the work of editors has increased in complexity because they now have to contend with AI generated submissions that are still evading software detection. Yet their invaluable contribution towards producing scholarly publications is completely disregarded, leading to their exclusion from benefitting from the research incentive funding.

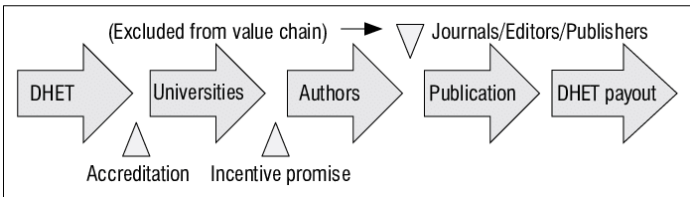

Figure 2: The South African Scholarly Publishing Value Chain (Tomaselli 2018)

The same is true with respect to publishers. They provide backroom services that are rarely evident to individual authors. Such services include computerised processing, detecting plagiarism and libel, undertaking similarity and artificial intelligence (AI) checks, cross-referencing, copy editing, marketing, software hosting upgrades, and archiving published articles in perpetuity. Costs are incurred in the provision of these essential services in the publication value chain. Traditionally, the publishers have absorbed and internalised these costs. However, the issue is that when the public higher education institutions and the authors are rewarded through research and publication incentive funding for the roles they play in generating publications, the publishers are excluded from benefitting from the research and publication incentive funding. This inexplicable exclusion has seen many local scholarly publishers charging authors page and administrative fees for articles submitted. However, this route has also some risks because in order to keep afloat, the journals may short-circuit some editorial and manuscript management processes so that they increase the frequency of publication, as well as the number of articles contained in each published issue. The scholarly publishing industry was forewarned about this

by the former Vice President of *Nature*, Butcher (n.d) who wrote:

> Speed, efficiency and cost control are what matter most. Editorial traditions, honed over decades, are perceived to be part of the problem.
> Corporate executives' primary concern is delivering double-digit revenue growth, and in an APC economy that means publishing more articles.

Along the same lines, almost two decades ago, the Academy of Sciences of South Africa (ASSAf, 2008) presciently warned of emergent electronic publication enabling easy proliferation of new titles and an associated 'avalanche of published rubbish' that would act as a 'lifesaver' for weak titles. Indeed, there is overprovision of journals in some disciplines, publishing recycled and/plagiarised articles. In management sciences, for example, Thomas (2019) calculated that plagiarism and textual recycling with the seventeen journals in that discipline area, cost the national fiscus R7 million in one year. This is indeed a costly unintended consequence of excluding vital role players within the research and publication value chain, from the pay out of the research output incentive subsidies.

Engendering contradictions within the state research promotion environment

The research enterprise in South Africa (Mouton *et al*., 2019) is governed by several policy instruments besides the DHET's policy for research and publication incentive funding. Bodies such as Academy of Sciences of South Africa (ASSAf), the National Research Foundation (NRF), and the Technology Innovation Agency (TIA) for example, also have suites of policies and practices that seek to promote research and publication within South Africa. The mandate of ASSAf, for example, includes, promoting and inspiring outstanding achievement in the different fields of science in South Africa; generally promoting interest in the sciences; and publishing scientific reports and other publications (Republic of South Africa, 2001). In pursuit of this mandate, ASSAf has a programme for promoting and enhancing the local and international standing of local journals; improving productivity of scholarly publications by means of digital platforms; and disseminating, and promoting the use of knowledge for public benefit. ASSAf has adopted a more interventionist approach which, among other things, includes running regular training for editors, and convening the annual meeting of the National Scholarly Editors' Fora at which publication issues are discussed, and policy suggested. It is not an overstatement to state that ASSAf appears to have stabilised the local scholarly journals and their management, and has substantially enhanced exposure of South African scholarly work globally after 2005. Within the last two decades, the number of journals published within South Africa has increased significantly to 337. Seventy-six local journals have licensed themselves to the Taylor & Francis multinational that has an office in Cape Town, and which works in a wider consortium that includes MedPharm and National Inquiry Scholarly Services (Le Roux 2015).

Unfortunately, occasionally, discordant synergies between some of the policies of ASSAf, the DHET and the other bodies, do occur. While cooperating well on inter-institutional administrative matters, each agency or body tends to pursue its own specific and often different priorities and policies in serving its constituency. For example, the value of publishing in DHET-recognised journals is muted in research rating criteria of NRF which focus on standing and impact of the publications. Similarly, both NRF as well as ASSAf emphasise on the quality of the research outputs rather than quantity. As a result, while overproduction of scholarly publications is rewarded under the research

incentive funding programme of the DHET, it raises red flags for the NRF and ASSAf, for example.

Public higher education institutions work within, and draw on, the policies of and 'good' practices promoted by these separate wider national support funding and regulatory bodies. They govern the allocation of resources, promote 'good' practices, and sometimes they set research agendas, as well. Each of these agencies or bodies set their own objectives, with their own assessment criteria, and work independently, but sometimes they do collaborate with each other. For example, ASSAf is tasked by DHET to conduct five-yearly assessments of journal quality to complement the CREST publication monitoring studies (Crewe 2020). ASSAf hosts the Scientific Electronic Library Online with its 110 DHET-recognised open access (OA) journals which is supported by the Department of Science and Innovation (DSI). The NRF manages the national reporting software that compiles its Research Output Submission System (ROSS) all qualifying journal publications entered by the different universities:

> The ROSS system was developed on behalf of the DHET to facilitate that Department's research output subsidy submission and review processes ... The system had a significant impact on streamlining DHET processes, including the panel review process, as well as the analysis of data required for the DHET's annual research output submissions report. The development and management of the ROSS system can be described as a remarkable achievement and a very successful collaboration between the NRF and the DHET (NRF 2018/2019, 17).

This administrative cooperation notwithstanding, one of the contradictions is that the NRF uses different criteria to DHET when assessing the corpus of works by individual researchers and scholars for the purpose of rating of them. Therefore, the research funding and regulatory map is complicated and not always well coordinated between and among the different agencies or bodies. Universities and researchers or scholars have to negotiate the contradictions in their own practices when interacting with them.

Conclusion and recommendations

The *Research Output Policy* (DHET, 2015), and the *Policy and Procedures for the Measurement of Research Outputs of Public Higher Education Institutions* (DoE, 2003) before it, were well-intended. They sought to promote research and publication within higher education by allocating research funds to public higher education institutions commensurate to their respective contribution to the production of scholarly publications. However, the implementation of these policies has revealed some unintended negative consequences that have been discussed in this piece of *Briefly Speaking*. For example, there is evidence that the focus on quantity is compromising quality of research outputs. The research incentive funding has become a trophy for which higher education institutions and individual researchers and scholars are engaged in fierce competition which is destroying collegiality and other traditional academic values.

The research incentive funding has also inadvertently become a tool for entrenching the inequalities between the historically advantaged and historically disadvantaged higher education institutions. Public higher education institutions that have established research capacity and infrastructure or facilities cumulatively earn more in research output subsidy than those higher education institutions that are developing and growing their research capacity and infrastructure from a lower base.

The way in which the research incentive funding policy is being implemented reduces its consistency with other policies governing the research and publication

activities in South Africa. For instance, while the research incentive policy rewards quantities of publications, the NRF's evaluation policy for the rating of researchers places much premium on impact of publications than large numbers of publications.

The research incentive funding is not available to all role players within the research and publication value chain. It is available to universities and authors of manuscripts, but not to the peer reviewers, editors and publishers, who also play important roles within the value chain. Peer reviewers and editors are expected to work *pro bono*, while the publisher is expected to absorb and internalise the cost of the essential backroom services they provide to maintain the credibility an integrity of publications. At a time when submissions to journals are increasing because of the increasing pressure to publish so as to earn the incentive funding, researchers and scholars would rather work on their own manuscripts to earn incentive funding than spend inordinate amount of time peer reviewing or editing manuscripts of other researchers and scholars who are, in essence their competitors for the subsidy funding. As a result, the pool of researchers and scholars who make themselves available to work as peer reviewers and editors for scholarly journal is shrinking worrisomely. Meanwhile, the publishers have to be innovative in terms of how to cover the costs of publications because they are not rewarded the same way as universities and authors through the research incentive funding. The undue pressures on editors and publishers is to a greater extent, responsible for some lapses that result in material that would ordinarily not be published, to be published. The threats are real and the figures in retractions and fraudulent work, as presented by Retraction Watch (https://retractionwatch.com/), are staggering.

On the positive side, the oversight offered by DHET and ASSAf regarding publication behaviour offers clear protections against the predator journals, and South Africa is unique in developing a very comprehensive bibliometric map of authors, outputs impacts and social benefit. This enables long-term national and annual university planning based on concrete data. The CREST studies are clear on what works, how government policy contributes, and of how best to leverage the resources available.

It is recommended that the policy behind the research incentive funding should be reviewed so that it should emphasise not only quantity of research outputs, but also in equal measure, the quality of outputs. It is also important for the policy to recognise other role players in the research and publication value change, and not only the universities and the authors of the publications.

Another recommendation is to build on the work that ASSAf, CREST and the DHET have been undertaking to create an understanding about the importance of going back to the basics of conducting research and publishing for advancing knowledge generation and application for public good. The motive for conducting research and publishing journal articles, books and book chapters should never be to earn research incentive funding. The DHET, working with the Academy of Science of South Africa (ASSAf), has commissioned CREST to undertake a three-year Publication Quality Framework Project (PQFP) to devise more efficient oversight mechanisms that will encourage ethical practices. These will be formulated to eliminate gaming of the research incentive programme (for example, article overproduction, textual recycling, and salami slicing); place emphasis on quality together with increasing output; reduce inequalities between the research-driven institutions on the one hand and the more teaching oriented universities on the other; and ensure that the incentive funds are used for research capacity building as their primary focus. In addressing the issues arising, the PQFP will be able to draw on the CREST quantified data in relation to the five yearly

ASSAf panel evaluations of article and journal quality.[1] This database offers good prospects for planning some enhancements to the research incentive funding system.

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Comments should be addressed to research@che.ac.za