

Chapter 8

Policy choices and implications

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The discussion in Chapter 7 focused on the ways in which the four national imperatives of growth, efficiency, transformation and quality influenced doctoral education and doctoral supervision in South Africa's universities. Chapter 7 concluded that the South African university system should be able to respond in innovative ways to all four imperatives if sufficient public and private funds were made available to enable at least 60% of doctoral students to engage in full-time doctoral studies. The chapter concluded further that growth in full-time studies would stimulate the introduction of differing models of doctoral education, and may encourage more black students to engage in doctoral work.

In this final chapter, we discuss, within the framework of the conclusions of Chapter 7, three key areas within which options should be considered and choices made. The three areas are summarised below:

- The first is the *National Development Plan* (NDP) and Department of Science and Technology (DST) target of 5 000 doctoral graduates per

annum by 2030, which will require decisions at national and institutional levels about doctoral enrolment growth, academic capacity, efficiency gains, transformation and quality.

- Interwoven with attempts to reach this ambitious graduate total target is a set of policy issues regarding internationalisation of doctoral studies, and in particular what South Africa's relationship should be with the rest of the African continent. We argue that there is a strong case to be made – given recent trends – to further strengthen South Africa as the hub for doctoral production in Africa. Such a policy choice will have major effects in terms of high-level knowledge production and innovation. However, in order to pursue this course of action, current immigration policies and policies related to human development would need to be revisited.
- Chapters 2 to 5 showed that high levels of differentiation already exist in the South African university system. Formalising these differences for the purposes of the delivery of doctoral education will require tough decisions to be made by the Department for Higher Education and Training (DHET), in coordination with other government agencies and institutional leadership.

It is important to stress that the aim of this chapter is not that of policy prescription, which is the domain of government, institutional leadership and interest groups. The overall aim of Chapter 8 is to illustrate and highlight challenges and options in the areas in which choices will have to be made.

Policy choice 1: *Growing doctoral enrolments and graduates*

The NDP (NPC 2012), strongly supported by Minister Pandor's 2014 DST budget speech (Pandor 2014), set a national output target of 5 000 doctoral graduates per year by 2030. It has also set a target of 75% for the proportion of academics to be holding a doctorate by the same year.

We have argued in this book that the doctoral education system is a complex one. A large number of factors at various levels of the system affect its overall performance. These factors range from geo-political forces (influx of doctoral students from the rest of Africa to South Africa), to policy and strategy considerations (funding framework for HE, incentive strategies, available scholarship support for postgraduate students), institutional factors (differentiation in the capacity of the university sector, institutional policies and strategies, institutional support structures and initiatives, supervisory capacity) and, of course, the individual student level (resources for study, support structures, nature of employment, academic readiness, personal motivation and so on).

If we suspend for the moment some of the more qualitative considerations listed above, as well as issues related to regional and national policy, the discussion of the feasibility of the 2030 targets can focus on four growth variables:

- Doctoral enrolments;
- The academic capacity of South African universities;
- Permanent academics with doctorates; and
- The efficiency of the doctoral system.

Growth in doctoral enrolments

South Africa has benefited from sustained and relatively high levels of growth in doctoral enrolments (6.4% between 1996 and 2012), mostly due to an annual rate of growth of 18% in students from the rest of Africa. The evidence presented in this book suggests that a 6% rate of growth in doctoral enrolments could be sustained if (a) the influx of students from the rest of Africa continues; (b) the participation rates of South African black students (especially African students) increase substantially; and (c) the academic capacity of universities, in terms of their academic staffing resources, increases at reasonable rates.

The assumption listed as (a) above seems to be a reasonable one as there is persuasive evidence from forthcoming CHET/HERANA studies that the number of doctoral enrolments from the African continent will continue to grow. Account would, however, have to be taken of negative international perceptions about South Africa (related, for example, to crime and xenophobia), as well as of the current bureaucracy around attaining student visas that may constrain the growth from the rest of Africa.

The second condition involving increases to the participation rates of South African black students will be more difficult to attain. We have provided ample evidence that South African black students struggle to secure the requisite funds to study (and, in particular, to study full-time). Deep-seated socio-economic realities affect this group adversely, and with these unlikely to change in the short to medium term, it is difficult to see how one could expect a substantial increase in their doctoral participation rates.

The third condition that academic capacity must increase cannot be taken as given. It is not inconceivable that some South African universities may start to cap the growth of their doctoral intakes if there is not a commensurate increase in their academic capacity.

Despite these considerations, we believe that the reasonable choices could be based on current enrolment growth rates. We do not believe that reasonable choice could be made within a high-growth scenario (which

might, for example, assume an average annual enrolment growth rate of 9%). A high growth rate could only be achieved if the current, very high annual growth rates (>18%) of students from other African countries are maintained or even increased.

Increases in academic capacity

If one assumes that doctoral enrolments will continue to increase, it is obvious that the system would need a corresponding increase in the number of academics able to provide the required supervision for these growing numbers. Even if the proportion of academics with PhDs increases (see below), it is unlikely that this would be adequate to meet the growing demand. It should be noted that the average annual increase in doctoral enrolments for the period 1996 to 2012 was 6.4%, which is more than double the average annual growth rate in academic staff numbers (2.9%) over the same period.

Would it be reasonable to base policy choices on an assumption that the average annual rate of increase in the number of full-time academics will in future exceed 2.9%? We believe that the assumption that there will be a high growth rate in academic staff numbers (e.g. 4% per annum) is not a reasonable one, and that it should probably not be included as a policy choice option.

An annual growth rate of 4% would be attainable only if the government invests substantial new amounts in expanding the current academic staff in the system, and specifically at the eight to ten universities that produce the bulk of doctoral graduates. We are aware that the DHET is planning to expand the investment in academic staff, but we think it is likely that these investments will be evenly distributed across all universities, regardless of their share of doctoral production.

So, although the 4% annual growth rate cannot be ruled out, we believe that any future policy choices should be based on the continuation of the current growth rate of 2.9% in permanent academic staff.

Increase in proportion of academic staff with PhDs

Achievement of this goal is more clearly within the control of universities. This target is the most likely to be achieved, especially if the NRF and universities expand the many initiatives to support staff with time-off and sabbatical grants to complete their doctoral degrees. However, the gap between the current proportion (41%) and the target (75%) is enormous, and there are a number of limiting factors that will affect the attainment of this target. First, the retirement and post-retirement policies of universities – especially the more productive universities – are major factors in

determining the size of the supervisory pool. There are still a few universities where academics must retire at age 60, which results in a considerable loss of capacity in the system. Second, the required increase in the proportion of staff with PhDs will have to happen *at the same time* as the pool of academics who retire or resign (or leave the system for other reasons) is being replenished. Third, a general increase in the proportion of staff with doctorates will not necessarily address the growing demand for doctoral supervision: the increase has to happen in the fields and disciplines where we anticipate the greatest growth to occur. The increases in enrolments are likely to continue to occur in certain fields (and these are not likely to be in the humanities and the social sciences). Hence, there needs to be a strategic alignment between the ‘supply’ of academic supervisory capacity and the ‘demand’ of new doctoral students.

Improvement in efficiency levels

One of our main arguments has been that once students are in the doctoral education system and are able to persist in their studies, universities and supervisors are quite efficient in managing doctoral outcomes. On average every academic with a PhD delivers a doctoral student about every four years (0.28 per year). Given the already strained burden of supervision (quantitatively and qualitatively), our view is that this constitutes an acceptable level of doctoral supervisory efficiency. In fact, if one keeps in mind that staff at the best performing universities (Stellenbosch, Pretoria and UWC) each produced 0.37 doctoral graduates in 2013, the picture is even more positive.

We do, however, believe that it is realistic (but not without more dedicated support and new incentives) to expect that all of the PhD-producing universities could achieve a ratio of close to 0.35 doctoral graduates per supervisor per year.

If, however, efficiency levels are expected to be increased beyond this (say to 0.4), then we would contend that this could only happen if the proportion of students studying full-time also increases substantially. We have shown that full-time students have shorter progression and completion rates. They complete their doctoral studies on average six to seven years earlier than part-time students and are, therefore, also able to contribute to knowledge production at an earlier stage of their academic and scientific careers.

Scenarios based on growth variables

The discussion in earlier subsections has focused on what could be regarded, for the purposes of achieving the 2030 target of 5 000 doctoral graduates per annum (NPC 2012), as a reasonable range of values for four

growth variables. The variables and ranges included in the discussion were these:

1. *Growth in doctoral enrolments*: 6% (current) and 9% (high) rate of average annual growth;
2. *An increase in academic capacity*: 2.9% (current) and 4% (high) rate of average annual growth;
3. *Proportion of academic staff with PhDs*: 41% (current) and an increased (high¹) proportion of 58%; and
4. *Efficiency rates*: Number of doctoral graduates produced by each doctorate-holding academic staff member: 0.28 (current) and 0.40 (high).

These options in combination generate 16 theoretical scenarios (see Appendix 6 for the complete table).

The possible scenarios that will be discussed in the remainder of this subsection are based on an assumption that the current 6.4% average annual growth in doctoral enrolments will be sustained up to 2030. Figures 8.1 and 8.2 present the possible outcomes for these scenarios, depending on whether the number of full-time permanent academic staff continues to increase at its *current* rate (Figure 8.1) or increases at a *higher* rate of 4% per annum (Figure 8.2).

Figure 8.1 shows the output effects within a framework of current growth rates in doctoral enrolments and permanent academic staff. The options available in this framework would be interventions designed to improve the proportions of academics with doctorates and/or graduate efficiency rates. If the choice made is to retain current doctoral proportions and efficiency rates, then the annual total of doctoral graduates produced by 2030 would be below 3 000. To achieve the target of 5 000 doctoral graduates by 2030, the choices and interventions would have to be ones designed to increase the numbers of academics with doctorates, and hence potential doctoral supervisors, by more than 40% by 2030 compared to the current total rate. The doctoral output efficiency rate would, at the same time, have to increase by about 50%. These are very stringent conditions, and hence even their achievement would pose major challenges to the doctoral education system.

Figure 8.2 retains the assumption that doctoral enrolments will increase at the current average annual rate of 6.4%. It assumes that, in contrast to the assumption embedded in Figure 8.1, the academic staff total will grow at the higher average annual rate of 4%.

The data flow in Figure 8.2 shows that a choice to increase the number of academics at a rate above the current 2.9% could have a major impact on doctoral outputs. The annual total of doctoral graduates could easily reach 5 000 by 2030 if a 4% academic staff increase is linked to improvements in the proportion of academics with doctoral degree qualifications. The earlier

analyses in this section have, however, shown that an increase of 4% in the overall total of academics is probably not a choice that will be available to those wishing to increase doctoral graduate outputs in South Africa.

Our discussions above attempted to show under what conditions the attainment of the annual target of 5 000 doctoral graduates would be possible. The conclusion reached is that to meet the target, the DHET, DST, NRF and other institutions (including the universities) would have to give serious consideration to strategies and models that would affect radical change (see previous chapter) to the doctoral education system in

Figure 8.1: 2030 scenarios - current (2%) average annual growth rate in (AAG) student enrolments

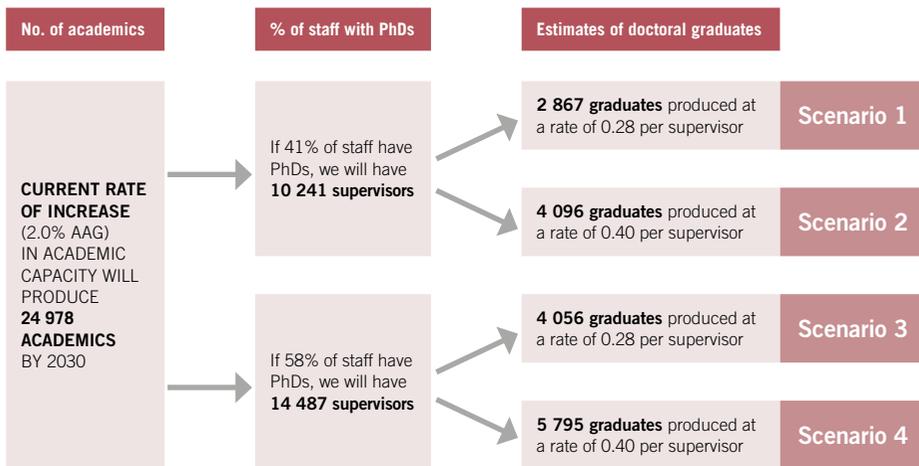
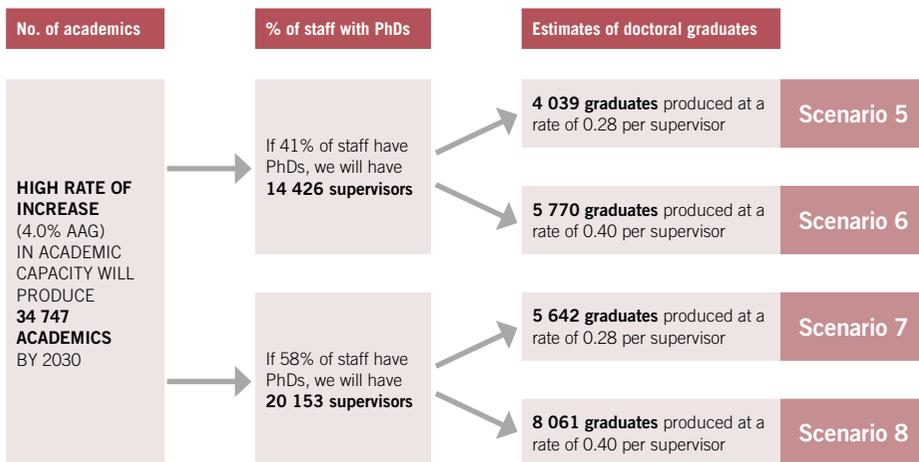


Figure 8.2: 2030 scenarios - high (4%) average annual growth rate in academic capacity



the country. Our analyses have shown that the choices which need to be made if the target of 5 000 is to have a chance of being achieved must include ones related to funding for higher proportions of full-time doctoral students.

One set of choices discussed in this subsection concerns the growing of the intake of doctoral students from the African continent. The argument in the subsection was that to retain the overall current rate of growth in doctoral enrolments (6.4%), a clear focus should be placed on continuing, and even expanding, the recruitment of doctoral students from other African countries. The next subsection spells out the choices to be made in terms of South Africa being made a 'PhD hub' for Africa.

Policy choice 2: *Making South Africa a PhD hub for Africa*

Emerging from the academic boycott in 1995, the NCHE never discussed the internationalisation of the doctorate, and the Department of Education had not introduced a formal HEMIS data category for foreign postgraduate students. Foreign doctoral students have continued to attract South African government subsidies on the same basis as students who are South African citizens or permanent residents. A consequence of this 'policy gap' has been that in 2000 16%, and in 2012 43%, of total doctoral graduates in South African universities were international students. This is by international comparisons a very successful internationalisation 'policy', albeit one that was not specifically intended.

More surprising is that in 2000, 10% (70 of 700) of doctoral graduates were from the rest of Africa, and in 2012 the proportion had reached 41.7%. Even more unusual, regarding internationalisation globally, is that the average annual growth rate of doctoral graduates from the rest of Africa, is at 21%, more than twice as high as the 9.8% for South Africans. The 'controversial' statistic which emerges is that by 2012 South African universities had more doctoral graduates who had entered from the rest of Africa than African doctoral graduates who resided in South Africa (498 compared to 323).

In terms of students, there are four key factors that contribute to the possibility of South Africa becoming a PhD hub for the continent. The first is the considerable investments the South African government is making, and intends to make, towards increasing PhD production; improving supervisory capacity among academics; providing incentives for students to remain in the system up to doctoral level; and supporting jobless graduates in work experience in science, engineering and technology institutions.

A second factor is that, relatively speaking, South Africa is inexpensive for PhD candidates from other African countries. In Chapter 4 (Transformation) we showed that pursuing a PhD degree in South Africa is

a bargain at around USD 13 000 per annum, in contrast to USD 46 000 in the UK and almost USD 70 000 at private US institutions such as New York University.

The third factor, as is shown in research from the Higher Education Research and Advocacy Network in Africa (HERANA), is that other African countries have low doctoral enrolments and low doctoral graduation throughput rates. For example, in 2013, Cape Town produced 50% (205 out of a total of 408) of the doctoral graduates in the sample of seven flagship universities (the other flagship universities being in Botswana, Ghana (Legon), Eduardo Mondlane, Nairobi, Makerere and Mauritius). There may also be a growing demand for doctoral study building up in these universities: the seven universities in the HERANA group enrolled 28 600 masters students in 2013, but only 3 200 doctoral students.

A fourth factor is that postgraduate students from elsewhere in Africa are seen as attractive to many South African universities – they contribute to racial transformation, efficiency (completing studies more quickly than local students) and quality (reputedly good writing skills).

In Chapter 7 we discussed a paradigm-changing approach that would aim to recruit and graduate more PhDs, particularly among black South Africans. But the paradigm shift is not only about students, we also pointed to the need to increase supervisory capacity, with a major potential source being suitably qualified academics from other African countries.

At a number of universities, such as Fort Hare and North-West (Mafikeng campus), where substantial numbers of academics from the rest of Africa have been employed, an unanticipated outcome has been a significant increase in research publication output. At Fort Hare, the publication output trebled between 2008 and 2012. At Mafikeng (the previously historically-disadvantaged university in the merger), the publication output grew from 6% of North-West University's output to 22% by 2012, and the ratio of publications per academic exceeded that of the historically-advantaged (white) Potchefstroom (DHET 2013a). This 'transformation' has finally punctured the myth that conditions at the historically black universities in South Africa are so detrimental that academics cannot do research and publish. A second unanticipated outcome is that the academics from the rest of Africa also attract doctoral students from the rest of Africa. At Fort Hare, for example, the output of PhDs quadrupled, from 11 in 2008 to 43 in 2012 (DHET 2013a).

But, the South African immigration policy relating to foreign academics and foreign skills has become ambiguous and uncoordinated (Cloete et al. 2015). In June 2014, new guidelines for work permits were promulgated. The central change in the new guidelines is that while previously a candidate could be accepted with what was described as 'exceptional skills', this has been replaced with a more focused and defined category of 'critical skills'

– that is, skills that are deemed critical to the needs of the country’s economy (Republic of South Africa 2014).

For academic positions, academics and researchers are listed under critical skills. However, at a workshop in May 2014 between the universities and the Department of Home Affairs, officials who had drafted the regulations disagreed with each other about whether this category should read (a) academics and researchers, or (b) academics or researchers, the implication being that if it is the former, then academics would be required to fulfil the critical skills list. The published list contains 40 areas, of which more than 30 are in South Africa’s new global research niche area of astronomy. The list starts with areas such as galaxy formation and deep observations of earlier galaxies, and ends with earth observation and natural and applied sciences (Republic of South Africa 2014). One immediate implication would be an end to international appointments within the humanities, law or social sciences. At the time of writing this chapter, this issue remained unresolved.

A senior university official dealing with international students and staff observed that the list of bodies/authorities from which confirmation and/or evidence of one’s critical skills are required is lengthy, and that officials are reluctant to help and are seemingly uncertain about what is expected of them. The consequence is that critical skills visas are often issued effortlessly outside of South Africa, whereas within South Africa there is uncertainty: ‘The risk here is clear: the processes, (mis)interpretation and insufficient coordination between government departments is/will prevent us from retaining these critical skills’ (Cloete et al. 2015).

However, a counter trend is that there is also pressure on academics to focus on training more South African Africans, and many universities (as well as the Department of Labour) do not count Africans from the rest of Africa as contributing to transformation. There are indications that the new African middle class, with access to policy influence, is trying to reduce competition for lucrative professional positions and lifestyles.

Another key policy issue relates to South Africa’s knowledge economy ambitions and in this regard it is instructive to take note of the work of Saxenian (2002) on Silicon Valley and its interaction with East Asia, and later with Latin America. Saxenian’s path-breaking article ‘Brain circulation: How high-skill immigration makes everyone better off’ illustrates a need to transform the traditional relationships between immigration, trade, education and economic development in the 21st century. The new high-skill immigrant entrepreneurs foster economic development directly by creating jobs and wealth, both in their new country and back home, and indirectly by coordinating information flows and providing linguistic and cultural know-how that promote trade and investment both ways (Saxenian 2002).

While Silicon Valley might be the innovation centre of brain circulation and has brought immense wealth to California, issues have been raised about immigration policy in the US and its impact on retaining high-skill immigrants in the country. As recently as 2010, New York Mayor, Michael Bloomberg, joining influential chief executive officers from the Partnership for a New American Economy, said: 'I can't think of any ways to destroy this country quite as direct and impactful as our immigration policy ... [W]e educate the best and the brightest, and then we don't give them a green card' (Packer 2010).

Even if South Africa does not have overt Silicon Valley ambitions, it could also be argued that we should at least look at the idea of 'EdHubs' proposed by John Douglass et al. (2011; 2014) of the University of California, Berkeley. The greater San Francisco area EdHubs model enables the enrolment of more high-paying 'out-of-state' students, and creates a space where universities can imagine themselves as knowledge hubs that respond to both regional and national economic needs, as well as to the thirst of a growing world (African) population for high-quality tertiary education.

This would sit comfortably with the 2013 *White Paper for Post-School Education and Training*, which states that hosting large numbers of international students could represent a major contribution by South Africa to the development of SADC, and that strengthening southern African economies will also boost South Africa's economy. The NDP actually suggests that South Africa establish itself as a hub for higher education.

If South Africa is to focus its internationalisation efforts on postgraduate – and specifically doctoral – education, postgraduate education should become more closely linked to an innovation, brain circulation, economy-migration model. However, experience and studies have shown that brain circulation could only be achieved if conditions in the rest of Africa's flagship institutions provide environments – and particularly research environments – that stimulate continental collaboration. However, currently, with the exception of a few nods to the rest of Africa, official policies are narrow in their horizon in that they focus on how to improve South African higher education and how to make South Africa (not the region or Africa) a knowledge economy. Obvious policy choices will involve either retaining the current focus on creating a South African knowledge economy, or moving towards the development of a regional knowledge economy.

Some other important policy decisions would have to deal with what kind of financial support students from the rest of Africa would qualify for and whether students from the rest of Africa would be eligible for the proposed full-time appointments. And then there are the related questions of whether the students from the rest of Africa qualify for work permits once they complete their studies and of a better coordinated work permit

system for academics from the rest of Africa that will stimulate collaboration and brain circulation, not mainly brain drain.

It will be crucial that the range of government departments affected adopts a more coordinated approach to these issues, rather than a continuation of the pursuance of policies that are at times contradictory. In addition to coordinated political will, more monitoring will be needed to include the tracking of student mobility – who goes back where, who stays, and by whom are they employed? All in all this points to a more rational, research-informed and consultative approach among all collaborators if South Africa is to be a PhD hub with brain circulation, and not another version of internal continental brain drain accompanied by accusatory transformation discourses.

Finally, at the continental level it is not enough for the African Union (AU) simply to say that there must be thousands more PhDs. As a continental structure the AU will have to do more to encourage brain circulation and perhaps look at European-type Erasmus Mundus Africa-wide collaboration and exchange programmes. At the launch of the new Millennium Goals (October 2015) there was a call for the AU Commission to put in place mechanisms to improve the movement of staff and students to institutions across the continent: ‘Mobility can be enhanced by providing an enabling environment, as well as reducing challenges to inter-country mobility.’²

Policy choice 3: *Implementing a differentiated university system*

South Africa has over the past 17 years produced six major policy documents that have considered the issue of differentiation in the higher education system. The consensus, starting with the first *White Paper* in 1997, has been that South Africa must have a differentiated higher education system. The problem has been how this should be done, within a context in which there were, and still are, competing demands for priority to be given either to overcoming the institutional inequities of South Africa’s apartheid past or to meeting the development needs of a changing society and economy.

Attempts to meet the equity demand led to a process of institutional mergers, between 2004 and 2006. Their aim was that of radically altering the apartheid landscape by merging and closing higher education institutions, and by reducing by 2013 the overall number of university-level institutions from 36 to 23. Attempts to meet the development demand led to three categories of university-level institutions being introduced after 2007. Institutions in all three categories would have strong undergraduate programmes, with (a) the six universities of technology having a major focus on vocational training; (b) the 11 traditional universities having a focus on professional rather than vocational training and on strong masters and

doctoral programmes; and (c) the six comprehensive universities offering a mix of university of technology and traditional university programmes at undergraduate level, and some masters and doctoral programmes.

After setting up this first, high level of differentiation, no government decisions have, however, been taken on the contentious decision of how differentiation could be extended into the three broad categories. The policy choices seem to have been set up as either (a) that of allowing (say) the 11 traditional universities to 'self-differentiate' by formulating their own vision and mission statements, or (b) that of differentiating through national contracts that are based on the empirical performance of traditional universities relative to goals and targets set for South Africa's traditional universities.

If the final choice of government is to allow self-differentiation, then no clear, formally recognised group of research universities will emerge in South Africa. This would run contrary to the growing consensus among national policy-makers and other central socio-economic actors that the university is a driver for economic growth and development. This has to do with the role of the university in producing a highly-skilled and competent labour force, and in producing new knowledge. Both contributions are essential to the creation of innovation and the development of a national economy that is globally competitive. This is well summed up by Olsson and Cooke (2013: 18) in an OECD/IHERD report as follows:

Top research universities in industrialised countries (often referred to as the Super RUs) usually dominate the global ranking tables. In contrast, their counterparts in middle and low-income countries have, if anything, more important missions because they are the engines of local and regional knowledge development and natural leaders of their own evolving academic systems. As these systems become increasingly complex and the need to nurture knowledge networks for research grows ever more essential, the success of these institutions becomes even more crucial for national development policy.

A clearly differentiated academic system is needed for research universities to flourish. But, according to Altbach (2013: 328):

The fact is that few if any developing countries have a differentiated academic system in place; and this central organisational requirement remains a key task ... These institutions must be clearly identified and supported. There must be arrangements so that the number of research universities will be sufficiently limited so that funding is available for them and that other resources, such as well-qualified academics, are not spread too thinly.

But as Altbach points out, research universities with strong doctoral programmes constitute a relatively small percentage of the higher education sector. In the US, the ratio is about 5% (220 research universities in a system of more than 4 000 post-secondary institutions); in the UK 25% (25 research universities among 100 universities); and in China 3% (100 research universities out of more than 3 000 institutions countrywide). In many smaller developing countries there is often only one research university and many countries have none (Altbach 2013).

As was stressed in the opening paragraphs to this subsection, the question about differentiation in South Africa is not whether the higher education system should be a differentiated one. Policy commitments to differentiation have been in place from 1997 through to 2014. The only level approved so far by government has, however, been the three-tier category discussed earlier. What has not been decided is how differentiation within the categories should be implemented, and whether cross-cutting of categories will be permitted. For example, a subcategory of research universities would naturally fall within the broader category of traditional university. But what of a subcategory for doctorate producing universities? Should this be limited to the category of traditional university, or should it cut across all three of the broad categories? To illustrate what would be involved in an implementation choice of this kind, we have selected two indicators for growth, efficiency, transformation and one for quality. The indicators are in Table 8.1 and are compiled from data presented in Chapters 2 to 5.

Differentiated doctoral production

Table 8.1 shows that in 2012 the top seven universities produced 68% of the doctoral graduates and the bottom six only 1%. In terms of growth rate, five universities grew at more than 20% annually during the period 2008 to 2012, while three had 0% growth.

Regarding efficiency (the 2006 cohort), four universities had a completion rate above 55% after seven years, and seven universities had a completion rate lower than 35%. Another indicator of efficiency is the ratio of PhD graduates as a percentage of academic staff with doctorates. In 2012, five institutions had a ratio higher than 0.30 and four universities lower than 0.10.

Regarding transformation, in 2012, five universities produced more than 90 black doctoral graduates each and six universities only 15 in total, while five universities produced more than 75 female graduates each, and six universities just 13 in total.

Using percentage of academic staff with a PhD as an indicator of quality, in 2012, six universities had more than 50% of staff with PhDs and five fewer than 20%.

Table 8.1: Indicators for performance in doctoral production

University	GROWTH		EFFICIENCY		TRANSFORMATION		QUALITY
	Graduates 2012	Average annual growth rate: 2008–2012	% of 2006 cohort graduating after seven years	Ratio of PhD graduates to academic staff with doctorates 2012	Number of black PhDs produced	Number of female PhDs produced	
Cape Peninsula	24	16.6%	34.0%	0.19	19	5	16%
Cape Town	199	7.1%	55.8%	0.28	98	78	65%
Central	5	0.0%	30.8%	0.07	3	1	26%
Durban	6	18.9%	46.2%	0.07	4	5	15%
Fort Hare	43	40.6%	34.1%	0.36	41	9	38%
Free State	94	14.3%	50.7%	0.25	42	44	40%
Johannesburg	109	10.5%	55.0%	0.37	52	53	29%
KwaZulu-Natal	177	6.8%	50.3%	0.27	138	91	47%
Limpopo	17	5.0%	32.0%	0.13	16	7	16%
Mangosuthu	0	0.0%	0.0%	0.00	0	0	9%
Nelson Mandela	86	16.3%	51.4%	0.36	51	26	41%
North-West	154	11.4%	52.1%	0.25	42	82	50%
Pretoria	200	2.7%	51.5%	0.32	83	99	49%
Rhodes	67	25.5%	50.6%	0.39	34	32	51%
South Africa	152	22.7%	24.5%	0.25	94	60	39%
Stellenbosch	240	18.9%	65.1%	0.46	107	96	53%
Tshwane	44	35.6%	51.1%	0.25	33	14	21%
Vaal	2	0.0%	0.0%	0.05	2	0	13%
Venda	4	18.9%	29.4%	0.04	4	1	31%
Walter Sisulu	3	10.7%	25.0%	0.04	2	1	12%
Western Cape	75	15.6%	59.8%	0.26	62	23	52%
Witwatersrand	150	9.1%	44.5%	0.25	92	56	55%
Zululand	28	21.1%	51.6%	0.35	26	11	27%

Note: Figures in bold indicate the top two universities in each category
Source: DHET, 2034

It is of course not the same institutions that perform the best for each of the indicators. In 2012, Stellenbosch and Pretoria both produced 200 or more graduates, while for the period 2008 to 2012, Fort Hare University and Tshwane University of Technology grew at more than 35% annually. Stellenbosch had a completion rate of 55.1% and Western Cape had a completion rate of close to 60% for the 2006 cohort. Stellenbosch and Rhodes had an above 0.39 ratio of PhD graduates to academic staff with doctorates. Regarding transformation, KwaZulu-Natal and Stellenbosch produced more than 100 black PhDs each, and each of these institutions graduated more than 90 women. Finally, at Cape Town and Witwatersrand more than 55% of the staff had a doctorate.

Looking at doctoral performance across the seven indicators, there is a grouping of at least seven traditional universities that consistently perform well across the indicators: Cape Town, KwaZulu-Natal, Pretoria, Rhodes, Stellenbosch, Western Cape and Witwatersrand. There is a second grouping of nine that are consistently in the top 10 in terms of at least five of the indicators: (a) four traditional universities: Fort Hare, Free State, Limpopo, North-West; (b) four comprehensive universities: Johannesburg, Nelson Mandela Metropolitan, South Africa and Zululand; and (c) one university of technology: Tshwane. The third grouping of seven universities performs poorly across most of the indicators. This group consists of (c) five universities of technology: Cape Peninsula, Durban, Central, Mangosuthu and Vaal; and (d) two comprehensive universities: Walter Sisulu and Venda.

It is worth noting that in terms of the official government classification of the system into traditional universities, comprehensive universities and universities of technology, four of the comprehensives (Johannesburg, Nelson Mandela Metropolitan, South Africa and Zululand) perform quite comparably with the second grouping of traditional universities as far as doctorate production is concerned. Regarding the universities of technology, it is only Tshwane that could be classified as being in the doctorate-producing grouping.

High performance relative to indicators and goals has often been attributed to historical advantage (some universities are more than 100 years old) and particularly to the apartheid practice of discriminatory allocation of resources and human capital (DHET 2013c). However, the data in Table 8.1 show that in post-apartheid South Africa, some of these differentiations in performance – particularly in terms of knowledge production (PhD and research output) – continued, but that there is a differentiation occurring amongst the historically disadvantaged institutions. For instance, Western Cape, Fort Hare and the Mafikeng campus of North-West University (see ‘South Africa as a PhD Hub’ above) have become much more productive, and the Tshwane University of Technology is comparable to the second grouping.

Government responses

Underpinning the paradigm shift proposal are some important policy imperatives that have been discussed in Chapter 1 and Chapter 7. Chapter 1 shows that globally there are two major discourses. Within the developed countries, with already high doctoral production and part of the knowledge economy, there is a debate about whether an increase in doctoral graduates is required and what kind of contribution (research skills, innovation and talentism) a PhD makes to their knowledge economies. In sharp contrast, there is a range of developing countries, from Brazil and Mexico in Latin America to numerous East Asian countries such as China, Malaysia, Singapore, where higher education, and specifically the doctorate, is seen as a development driver towards becoming a knowledge economy – and these countries have invested massively in the expansion of doctoral programmes (see Chapter 1).

Central to this group of countries is that the call for increasing doctoral output is part of a larger policy framework, which includes a pact (broad agreement) about a range of policies often across different ministries – it is not just a case of growth in doctorates.

But in Chapter 1 we showed that in Africa the discourse is very different. The HERANA study reported that amongst the eight participating countries only Mauritius had a broadly supported knowledge economy development model with policies across different ministries, and that for the other seven countries there was no pact about a development model, nor about the role of the university in development. We concluded that in Africa the call from both Dr Dlamini-Zuma of the AU for thousands more PhDs is without an economic context, and the IAU-ACUP (2012) conference report stated that while the status of the PhD is recognised, African societies do not know how to evaluate the competencies, which raises the question whether the demand for more doctorates is mainly a response to the brain drain.

But in South Africa the government (through the DHET, DST and National Research Foundation [NRF]) has responded within a knowledge economy discourse, even though, as we pointed out earlier, the real economy is still very much a low-skill, mineral-extraction, export-dominated model.

Both the DHET and the NPC have, in policy documents, supported the notion of strengthening high-performing research-led universities. For example, the DHET *White Paper* (2013c: 29) declared that in ‘the university sector this continuum will range from largely undergraduate institutions to specialised, research-intensive universities which offer teaching programmes from undergraduate to doctoral level.’ It goes on to state that:

As part of the strategic objective envisioned by the National Plan for Higher Education, this policy aims to sustain current research strengths and to promote the kinds of research and other knowledge outputs required to meet national development needs.

In its rhetoric, the DHET is quite in line with the sentiments captured in the NDP, which in 2012 stated the aim to:

strengthen universities that have an embedded culture of research and development. They should be assisted to access private sector research grants (third stream funding) in addition to state subsidies and student fees, attract researchers, form partnerships with industry and be equipped with the latest technologies. (NPC 2012: 319)

In terms of financial policy, DHET has rewarded performance in terms of subsidies for research output and doctoral enrolments and graduation. (See Appendix 5 for details of the substantial subsidies for doctoral education, differentiated across fields of study.) The DST and NRF have awarded scholarships, special professorships (South African Research Chairs Initiative)³ and Centres of Excellence⁴ based on merit and equity, but the strong doctoral education group of institutions has benefitted commensurately, as could be expected if merit is an important, even if not the only, criterion.

Tough questions

The findings presented in this book pose anew at least six tough policy questions that the country has struggled with since 1994, and continues to struggle with, if it wishes to gear up the system to meet the target of 5 000 new doctorates a year by 2030.

First, should the seven institutions that make up 30% of the system and produce 70% of the doctorates be regarded and recognised as having an ‘embedded research culture’, as research-intensive universities with strong doctoral programmes? If so, what are the policy levers for further strengthening such universities? Second, should the nine institutions in the next cluster be encouraged and incentivised to develop and expand their research and doctoral education capacities? While this would broaden the base of the system, it would run counter to the international trend of singling out a smaller group of institutions worthy of high-level support. Third, should the six institutions that produce 1% of the doctoral graduates be allowed to continue to offer doctoral programmes? In the USA and Norway, for example, PhD-awarding status is attained only after meeting

fairly stringent conditions. Fourth, if a decision is taken to increase funding support for full-time doctoral studies, with the attendant considerable costs involved, should these programmes be distributed across all institutions or concentrated in the most efficient universities with demonstrated supervisory capacity? Fifth, it is highly unlikely that South Africa will meet the target without welcoming candidates and supervisors from the rest of Africa more actively. Can this be encouraged in the face of the prevailing national mood? Last, but certainly not least, can the country afford not to incentivise (highly productive) universities to produce more black women with doctorates?

In conclusion

The central issue that emerged from the discussion in this chapter is that if the proposal on a shift in doctoral education paradigm is accepted, it will involve much more than simply giving more funding to the DHET to continue the current performance system. It will require more policy coordination from the different role-players. To achieve that there will have to be a pact (broad agreement) amongst national departments, and between universities and the national and relevant continental stakeholders. To inform these different role-players, and provide evidence for decision-makers at different levels, there will have to be more and ongoing research – the current fragmented institution-driven expansion could be disadvantageous to everybody concerned.

What this study has attempted to show is that discourses framed around the single imperatives of growth, efficiency, transformation or quality do not on their own generate productive policy discourses. What is required is a change in approach that accommodates multiple imperatives and allows for these to be addressed simultaneously. In South Africa, we will have to learn to become better at identifying and managing the policy trade-offs arising from competing imperatives than at stridently promoting single causes.

Notes

- 1 This proportion is based on an average annual increase of 4%.
- 2 <http://www.universityworldnews.com/article.php?story=20151002124741617&mode=print>
- 3 <http://hcd.nrf.ac.za/?q=node/16>
- 4 <http://www.nrf.ac.za/division/rcce/instruments/centre-of-excellence>