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OPSOMMING

Hoewel die Suid-Afrikaanse regering 'n al groter rol in tersiêre onderwys speel, het sy begtrokkenheid daarby nie die nodige aandag ontvang nie. Die oogmerke met tersiêre onderwys is multi-dimensioneel op sowel die individuele as die samelewingsvlak, maar die doel in hierdie ondersoek was om dit te beskou in verhouding tot die mannekrag- en sosio-ekonomiese behoeftes van die land. Dit het beteken dat 'n analise gemaak moes word van hoe die regering probeer om in behoeftes op hierdie gebiede te voorsien, veral ten opsigte van sekere sleutelberoeppe, soos die ingenieurswese en die onderwys.

Die volgende hipoteses is getoets:

HIPOTESE 1

Die prestige van die universiteite as deel van die tersiêre onderwyssisteem sal vir 'n langer tydperk voortduur as wat die ekonomiese werksaamhede en produktiwiteit van sy graduandi alleen sal regverdig.

HIPOTESE 2

Die uitbreiding van tersiêre onderwys vir die elite tot onderwys vir die massas sal lei tot 'n groter afhanklikheid van regeringsbefondsing en tot 'n toenemende behoefte aan beheer, koördinasie en nasionale standarde.

HIPOTESE 3

Regerings sal onderbele in tegniese onderwys.

HIPOTESE 4

In "swak" ekonomiese tye sal tersiêre onderwysinskrywings 'n dalende neiging toon.
HIPOTESE 5

Volgehoue universiteitsprestige sal daartoe lei dat die kollege vir gevorderde tegniese onderwys (KGTO) en technikoninskrywings, sowel as diplomas en sertifikate wat deur hulle toegeken word, 'n agterstand sal toon ten opsigte van universiteitsgrade en -diplomas.

HIPOTESE 6

In "swak" ekonomiese tye sal die inskrywingstal aan die KGTO en vir tegniese opleiding aan technikons 'n dalende neiging toon.

HIPOTESE 7

Vrese vir 'n oorproduksie van universiteitsgraduandi, veral in die geesteswetenskappe, aan die een kan en tekorte aan sekere vorme van mannekrag aan die ander kant, sal lei tot regeringspogings om hierdie balans te herstel.

HIPOTESE 8

Daar sal betekenisvolle beperkinge gelê wees/word op regeringspogings om die vereiste soort en aantal mense in terme van opgeleide mannekrag te lewer, want sodanige ingryping is teenstrydig met individuele aspirasies.

Tersiêre onderwys sedert 1945 vir al die bevolkingsgroepes is ondersoek. Hoewel daar sekere gapings in die beskikbare inskrywings- en uitgawe-data is, is gevolgtrekkings daaruit nie om dié rede ongeldig nie.

In 'n plurale samelewing met diep klowe tussen die vier hoofbevolkingsgroepes en met kleiner intra-groep gapings, het aparte onderwysstelsels ontwikkel. Al die bevolkingsgroepse slaan akademiese onderwys baie hoog aan, veral die Swartes. Die keuse ten gunste van 'n akademiese onderwys is diepgewortel, toon baie fasette, en slaan terug op koloniale tye. In die Suid-Afrikaanse konteks is daar ook politieke,
sosio-ekonomiese, opvoedkundige en beroepsfaktore wat hierdie vooroordele bestendig.

Sedert die ontstaan van die Unie in 1910 is daar 'n deurlopende debat en stryd oor die verdeling van seggenskap oor die onderwys tussen die sentrale regering en die provinsiale owerhede. Dit was veral die geval met die onderwyskolleges vir Blankes. Die stryd sal binnekort tot 'n einde kom wanneer die sentrale regering hulle sowel as primère en sekondère skole vir Blankes oorneem.

Swart onderwys is in 1954 tot op universiteitsvlak van die provinsiale owerhede oorgeneem as deel van die beleid van afsonderlike ontwikkeling. Dieselfde is gedoen in die geval van Kleurlingonderwys in 1967, en teen 1970 ook met Indiëonderwys. In 1959 is die Universiteitskollege van Fort Hare deur die sentrale regering oorgeneem, en is die universiteitskolleges van Zoeloeland en die Noorde vir spesifieke etniese groepe opgerig. Sedertdien het die nie-Blanke universiteite studente-onluste beleef, veral dié vir Swartes. Regeringsbeleid het dus onbedoeld tot hulle verpolitisering bygedra.

Die administratiewe struktur is insgelyks baie komplek. Daar is een onverwysministerie vir elke hoofbevolkingsgroep, sowel as een vir algemene onderwyssake, benewens 'n ingewikkelde statutêre adviesstelsel van rade, komitees, ensovoorts. Daar is egter geen liggaam wat die regering van advies bedien in verband met tersiëre onderwys as 'n geheel vir enige van die bevolkingsgroepie nie.

Die huidige besteding aan universiteite van 1953 tot 1985 is gedoen in terme van die Holloway-formule, wat bestaan uit die basiese subsidie, standaardvoorsiening, lewenskostetoelaag, vrye inkomste en kapitaaluitgawe. Die nuwe formule plaas meer klem op produksie, met die helfte van die fondse beskikbaar in Junie en die ander helfte in Desember. Die natuurwetenskappe ontvang ook ietwat meer as die geesteswetenskappe.

Universiteitstoelatings het baie vinniger gegroei as onderwyskollege-, KGTO- en technikoninskrywings. Een van die gevolge van hierdie
fenomenale groei was 'n beduidende druipsyfer, veral onder eerstejaarstudente. Hierdie groot uitbreiding in tersiêre onderwys het gelei tot 'n groter afhanklikheid van regeringsbefondsing, soos voorspel in hipotese 2. Hipotese 3 is ook aanvaarbaar, want daar was vir 'n lang ruk onderbesteding aan universiteitsopleidng, alhoewel dit nie meer die geval is ten opsigte van nie-blankes nie. Hipotese 4 tot 6 ontbreek aan beduidende ondersteuning en kon dus nie bevestig word nie. Oorkoepelende inskrywingin tersiêre onderwys word nie normaalweg tot enige duidelike mate ekonomies bepaal nie. Hipotese 5 is gestaaf, want KGTO- en technikoninskrywings en -sertifikate en -diplomas toegeken, in teenstelling met universiteitsinskrywings en grade en diplomas toegeken, het agtergeraak by die totale aantal toekennings en toon dus 'n afname in verhouding. Die laaste gedeelte van hipotese 1 is gestaaf; tegnici verdien byna soveel as onderwysers en soms selfs meer as graduandi, maar dit ontbreek hulle aan prestige.

Menslike kapitaalteorie het sedert die sestigerjare teoretiese regverdiging verskaf vir die groot uitbreiding in tersiêre onderwys. Die teorie kom daarop neer dat investering in onderwys groot dividende sal oplewer aan sowel individue as die ekonomie in terme van 'n hoër groeikoers. Sedert die vroeë sewentigerjare het daar egter toenemende kritiek van sosiale wetenskaplikes op die terrein gekom. Baie het beweer dat daar 'n afnemende positiewe korrelasie tussen onderwysinskrywings en groeikoerse mag bestaan en dat selfs negatiewe korrelasies gevind mag word. Party het selfs aangevoer dat daar sosiale perke aan groei is -- en dit sluit dan onderwys in.

Groeiende oorskotte aan universiteitsgraduandi oorsee, voortdurende tekorte aan ingenieurs en tegnici, en die toenemende aantal sekondêre skoolverlaters, waarvan die meeste 'n akademiese opleiding het, het tot kommer in regeringskringe en die skep van die De Lange-kommissie gelei. Hipotese 7 is dus ook gestaaf. Die De Lange-kommissie het aangevoer dat onderwys gekoppel moes word aan die mannekrag- en ekonomies ontwikkelingsbehoeftes van die land. Vorige regeringskommissies het die probleme van tegniese en onderwysperonseeltekorte ontleed. Baie van hulle aanbevelings is geïmplementeer, dog tekorte aan tegniese personeel het gebly.
Die regering het probeer om die doelwitte van mannekrag- en ekonomiese ontwikkelingsbehoeftes van die land te bereik, maar soos in hipotese 8 veronderstel, het daar haakplekke gekom omdat sy doelwitte teenstrydig was met individuele doelstellings. Baie studente neem tersiër onderwys om suiwer gebruiks- of sosio-ekonomiese redes. Daar is ook 'n minderheid wat dit nastreef ter wille van selfontwikkeling of van die uitbreiding van kennis, afgesien van ekonomieseoorweginge. Die pres-tige van universiteitsopleiding skep ook 'n sterk sosiale behoefte daarvoor.

Vraag- en aanbodprojeksies ten opsigte van ingenieurs en tegnici dui op voortgesette tekorte oor die korttermyn. Wat onderwysers betref, sal daar genoeg Blanke-, Kleurling- en Indiëonderwysers wees, miskien selfs 'n surplus oor die mediumtermyn. In die geval van Swartes sal die huidige tekorte voortbestaan.

Die aantal nie-blanke universiteitstudente mag teen 1990 gelyk wees aan dié van blankes. Die Blanke bevolking alleen is nie meer in staat om voldoende hoëvlakmannekrag te lewer nie. Oor die korttermyn lyk die vraag na universiteitsgraduandi goed, maar dit beteken nie dat daar nie oor die langtermyn probleme gaan wees nie. Werkloosheid onder universiteitsgraduandi was tot dusver laag, maar onderbenutting, veral in die geesteswetenskappe, was baie groter. Daar sal 'n toenemende aantal van onderbenutte universiteitsgraduandi wees, met die gepaardgaande potensiaal vir politieke ontevredenheid onder hoog-opgeleide en gefrustreerde mense, veral die Swartes.

Moontlike oplossings vir die tekorte aan ingenieurs en tegnici sluit in die toekenning van grade deur technikons, die akkreditering van technikon-kursusse, en die toekenning van grade deur 'n eksterne liggaam. In die geval van onderwysers sal die verhoging van hulle salarissé en die samesmelting van onderwyskolleges met die fakulteite van opvoedkunde aan die universiteite uitloop op 'n verhoging van hulle prestige, en sal meer mans tot die onderwysberoep gelok word.

Wat werkloosheid en die onderbenutting van universiteitsgraduandi betref, lê die oplossing in die verbinding van individuele handelinge met
maatskaplike behoeftes. Aansporings of ontmoedigings van die een of ander aard skyn nodig te wees, soos gedifferensieerde tarieweskale en 'n beperking op toelatings in dié vakrigtings wat oorskotte lewer. Die regering behoort ook werk te verskaf aan werklose universiteitsgraduandi en moet die privaatsektor aanmoedig om dieselfde te doen. Al hierdie oplossings het nadele sowel as voordele, maar op die duur toon hulle ten minste die potensiaal om selfs ernstige gevolge te vermy.
SUMMARY

Although the South African government plays an increasing rôle in tertiary education, its involvement has not received the attention that it deserves. The goals of tertiary education are multi dimensional at the individual and societal levels, but the guiding paradigm was viewing it in relation to the manpower and socio-economic needs of the country. This meant analysing how the government attempted to deal with these needs, especially in certain key professions, such as engineering and teaching.

The following hypotheses were tested:

HYPOTHESIS 1

The prestige of the universities within the tertiary education system will persist for a longer period than the economic rewards of its graduates alone would justify.

HYPOTHESIS 2

The expansion from élite to mass tertiary education will lead to greater dependence on government funding and increased need for control, co-ordination, and national standards.

HYPOTHESIS 3

Governments will underinvest in technical education.

HYPOTHESIS 4

In "bad" economic times tertiary education enrolments will decline.
HYPOTHESIS 5

Continuing university prestige will cause the college of advanced technical education (CATE) and technikon enrolments and diplomas and certificates awarded to lag behind university degrees and diplomas.

HYPOTHESIS 6

In "bad" economic times CATE and technikon technical enrolments will decline.

HYPOTHESIS 7

Fears of surpluses of university graduates, especially in the arts, on the one hand and shortages of certain types of manpower on the other hand will lead to government efforts to redress the balance.

HYPOTHESIS 8

There will be significant limitations on government efforts to create the desired numbers and types of skilled manpower, for interventionism of this sort will run counter to individual aspirations.

Tertiary education for all of the population groups since 1945 was covered. Whilst there are some gaps in the available enrolment and expenditure data, they do not invalidate the conclusions.

In a plural society with deep cleavages amongst the four main population groups and lesser intra group cleavages, separate education systems developed. All population groups value academic education very highly, especially the blacks. The biases in favour of an academic education are deep rooted and multi faceted, going back to the colonial times. Within the South African context, there are also political, socio-economic, educational, and vocational factors reinforcing these biases.
Ever since the creation of the Union in 1910 there has been an ongoing debate and controversy about the division of authority in education between the central government and the provincial governments. This has been especially the case with the colleges of education for the whites. It will soon end, however, when the central government will take them over, as well as primary and secondary schools for the whites.

Black education was taken over from provincial governments in 1954 up to the university level as part of the separate development policy. The same was done in the case of coloured education in 1967, and by 1970 with Indian education. In 1960 the University College of Fort Hare was taken over by the central government, and the University Colleges of Zululand and North were also created in 1959 for specific ethnic groups. Since then all of the non-white universities have experienced student unrest, especially the black ones. The government policy had the unintended consequence of contributing to their politicisation.

The administrative structure is a complex one. There is one education ministry for each major population group, plus one dealing with general education matters. An elaborate statutory advisory system of boards, committees, and councils exists. There is, however, no body offering advice to the government on tertiary education as a whole for any of the population groups.

The current expenditures for universities from 1953 until 1985 were under the Holloway formula, consisting of the basic subsidy, standard provision, cost of living allowance, free income, and capital expenditure. The new formula provides more emphasis upon outputs, with half of the funds being made available in June and the other half in December. Those in the natural sciences also receive somewhat more than those in the human sciences.

University enrolments have grown much faster than the college of education, CATE, and technikon enrolments. Thus, the first part of Hypothesis 1 was substantiated. One of the consequences of this phenomenal growth has been a significant failure rate, especially amongst first-year university students. This great expansion of tertiary edu-
cation has led to greater dependence on government funding, as predicted by Hypothesis 2. Hypothesis 3 also holds true, for there was under-investment in CATE and technikon education for a long time as opposed to university education, although this is no longer true for the non-whites. Hypotheses 4 and 6 lacked significant supporting evidence and thus they were not confirmed. Tertiary education overall enrolments are not normally economically determined to any marked degree. Hypothesis 5 was upheld, because CATE and technikon enrolments and certificates and diplomas awarded as contrasted to university enrolments and degrees and diplomas awarded have lagged behind total awards and constitute a declining proportion. The last part of Hypothesis 1 is confirmed; technicians earn almost as much as teachers and sometimes even more than university graduates. Yet, they lack their prestige.

Human capital theory, beginning in the 1960s, provided the theoretical justification for the great expansion of tertiary education. It maintained that investment in education will yield rich dividends to the individuals and to the economy in terms of higher growth. Since the early 1970s, however, it has come under increasing criticism from social scientists. Many maintained that there might be a declining positive correlation between education enrolments and growth rates and even negative correlations. Some even maintained that there are social limits to growth, including in education.

Developing surpluses of university graduates abroad, continuing shortages of engineers and technicians, and the rising number of secondary school graduates, most of them with an academic education, led to government concern and the creation of the De Lange Commission. The government tried to redress the balance between university graduates in general and the shortages of technical and teaching personnel in particular. The De Lange Commission maintained that education must be linked to the manpower and economic development needs of the country. Earlier government commissions addressed the problems of technical and teaching personnel shortages. Many of their recommendations were implemented, but shortages of technical personnel have remained. Hypothesis 7 was thus confirmed.
The government has tried to pursue the goals of manpower and economic development needs of the country, but as hypothesised (Hypothesis 8) it has run into difficulties because its goals run counter to individual aspirations. Many students pursue tertiary education for purely utilitarian or socio-economic reasons. There is also a minority which desires it for self-development or the advancement of knowledge regardless of the economic consequences. Moreover, the prestige of university education creates a strong social demand for it.

Supply and demand projections for engineers and technicians indicate continuing shortages in the short-range at least. As far as the teachers are concerned, there will be enough white, coloured, and Indian ones, perhaps even some surpluses in the medium-range. In the case of the blacks, shortages will remain.

The number of non-white university students by 1990 might equal white university students. The white population alone is no longer able to provide sufficient numbers of high level manpower. In the short-range the demand for university graduates looks good, but this does not mean that there will be no problems in the long-range. Unemployment of university graduates has been low, but underemployment, especially in the arts, has been far more significant. There will be increasing numbers of underemployed university graduates, with the potential for political discontent amongst highly educated and frustrated people, especially the blacks.

Possible solutions to engineer and technician shortages include the granting of degrees by technikons, validation of technikon courses, and the awarding of degrees by an external authority. In the case of teachers, increasing their renumeration and the merging of the colleges of education with the university faculties of education would result in increasing their prestige and attracting more men to the profession.

As far as unemployment and underemployment of university graduates are concerned, the solution lies in relating individual actions to societal needs. Incentives or disincentives of one sort or another appear to be necessary, such as differentiated fee structures and the limiting of
enrolments in those disciplines which produce labour market surpluses. The government could also provide employment for unemployed university graduates and encourage the private sector to do the same. All of these solutions have disadvantages as well as advantages, but in the long run they have the potential of avoiding even more serious consequences.