A Decision Support Model for University Management

by

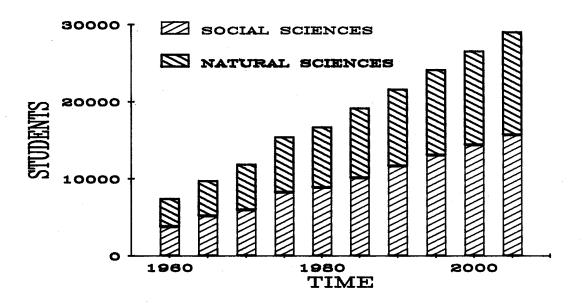
P. J. Vermeulen¹, W. J. Rossouw¹, and M. J. Joubert²

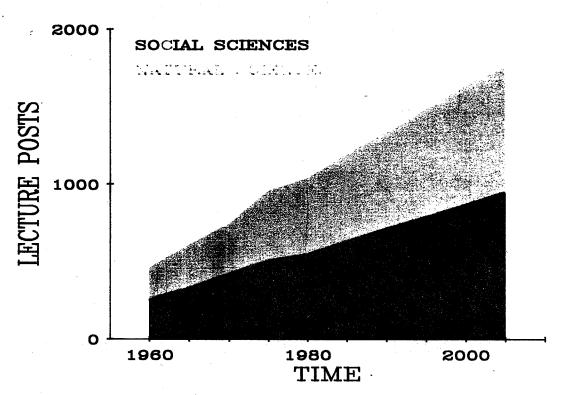
¹University of Pretoria ²University of Zululand Republic of South Africa

PRE-1986 SITUATION

- (a) UNCONSTRAINED GROWTH OF UNIVERSITIES
- (b) 6% GROWTH RATE
- (c) 85% GOVERNMENT SUBSIDY UNCONDITIONAL
- (d) OPEN CHOICE OF FIELD OF STUDY
- (e) ADMISSION CRITERIA IN SOME FACULTIES (E.G. MEDICAL & VETERINARY) DUE TO LIMITED FACILITIES
- (f) LECTURING POSTS ACCORDING TO SUBSIDY FORMULA

HISTORICAL TRENDS AND EXTRAPOLATION





NEW DISPENSATION AND CONSTRAINTS

- (a) GOVERNMENT SUBSIDY RESTRICTED TO 1986
 UNDERGRADUATE STUDENT NUMBERS
 NO GROWTH INCENTIVE
- (b) GROWTH IN POST-GRADUATE ENROLEMENT WILL ENHANCE GOVERNMENT SUBSIDY
- (c) GROWTH IN TECHNICONS WILL BE STIMULATED AT THE EXPENSE OF UNIVERSITIES
- (d) NATIONAL MANPOWER REQUIREMENTS MUST BE CONSIDERED
- (e) RESEARCH OUTPUT AT UNIVERSITIES WILL BE REMUNERATED BY THE GOVERNMENT
- (f) HIGHER STUDENT SUCCESS RATE ENCOURAGED
- (g) UNIVERSITIES ENCOURAGED TO GENERATE OWN FUNDS

FACTORS CONSIDERED BY MANAGEMENT (A) EXTERNAL FACTORS

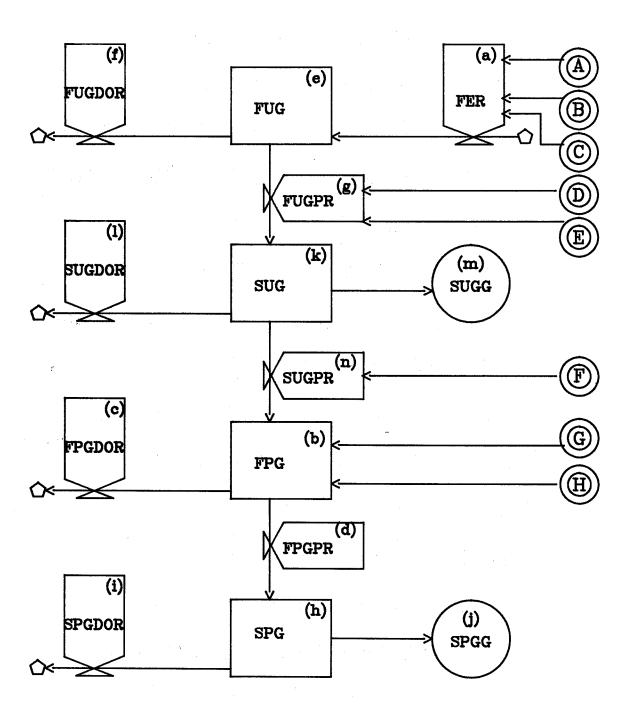
- (a) MANPOWER REQUIREMENTS
 STIMULATE/DEPRESS CERTAIN FACULTIES
 AND DEPARTMENTS
- (b) POPULATION GROWTH
- (c) STATE OF NATIONAL ECONOMY
- (d) GROWTH OF COMPETING TERSIARY INSTITUTIONS

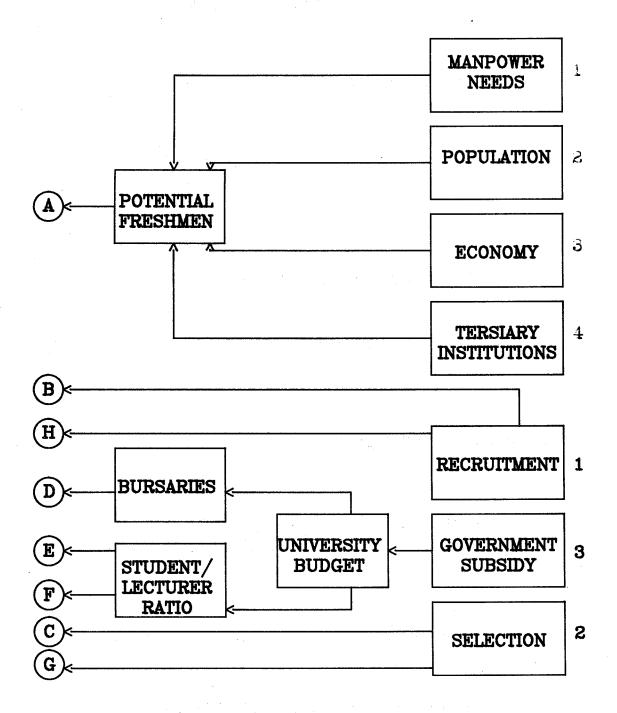
(B) POLICY FACTORS

- (a) NUMBER AND QUALITY OF BURSARIES
- (b) UNDER/POST-GRADUATE SELECTION PROGRAMMES
- (c) RECRUITMENT PROGRAMMES
- (d) FUND RAISING CAMPAIGNS
- (e) "EXCELLENCE" OF PERSONNEL

NOMENCLATURE OF VARIABLES IN FLOW DIAGRAM

- (a) FER FRESHMEN ENROLEMENT RATE
- (b) FPG FRESHMEN POST-GRADUATES
- (c) FPGDOR FRESHMEN POST- GRADUATE DROP OUT RATE
- (d) FPGPR FRESHMEN POST-GRADUATE PROMOTION RATE
- (e) FUG FRESHMEN UNDERGRADUATES
- (f) FUGDOR FRESHMEN UNDERGRADUATE DROP OUT RATE
- (g) FUGPR FRESHMEN UNDERGRADUATE PROMOTION RATE
- (h) SPG SENIOR POST-GRADUATES
- (i) SPGDOR SENIOR POST-GRADUATE DROP OUT RATE
- (j) SPGG SENIOR POST-GRADUATE GRADUATIONS
- (k) SUG SENIOR UNDERGRADUATES
- (1) SUGDOR SENIOR UNDERGRADUATE DROP OUT RATE
- (m) SUGG SENIOR UNDERGRADUATE GRADUATIONS
- (n) SUGPR SENIOR UNDERGRADUATE PROMOTION RATE





DECISION OPTIONS

EXTERNAL SCENARIO PARAMETERS

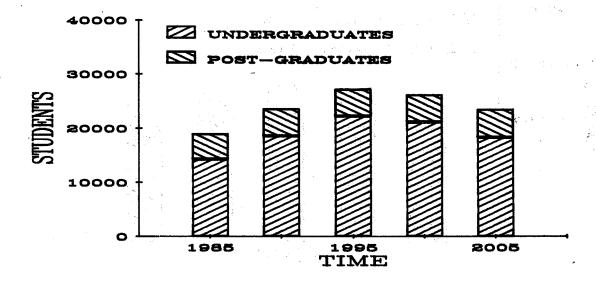
- 1. MANPOWER NEEDS IN CESM-CATEGORIES
- 2. POPULATION GROWTH RATE AND MIGRATION
- 3. GROWTH RATE OF THE ECONOMY
- 4. OTHER TERSIARY INSTITUTIONS

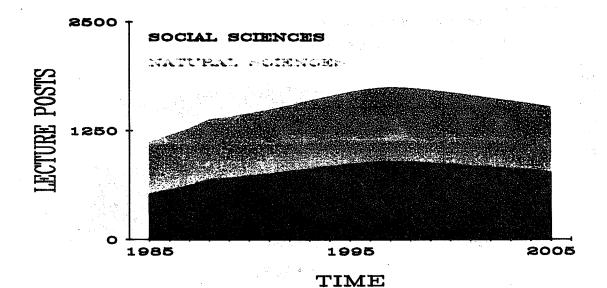
POLICY OPTIONS

- 1. UNDER- AND POST-GRADUATE RECRUITMENT PROGRAMMES FOR THE 22 CESM-CATEGORIES
- 2. UNDER- AND POST-GRADUATE SELECTION PROGRAMMES FOR THE 22 CESM-CATEGORIES
- 3. GOVERNMENT SUBSIDY AND DISTRIBUTION OF UNIVERSITY BUDGET

SCENARIO 1 * NO RECRUITMENT

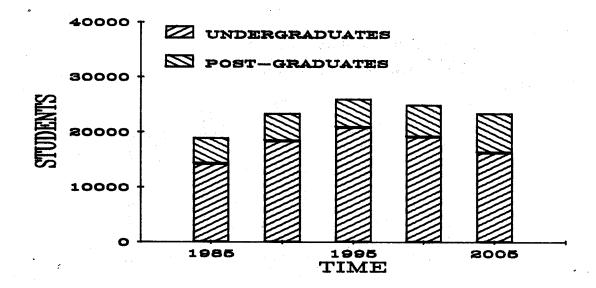
- * NO SELECTION

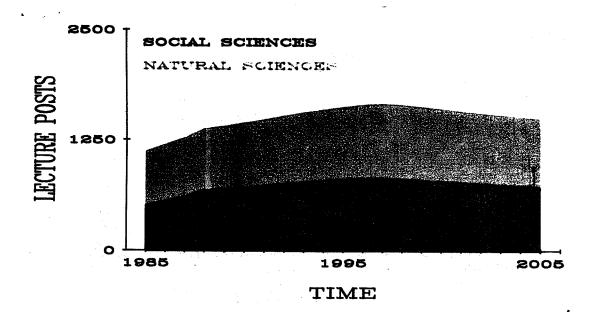




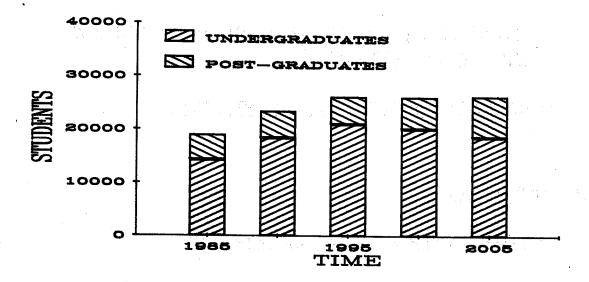
SCENARIO 2

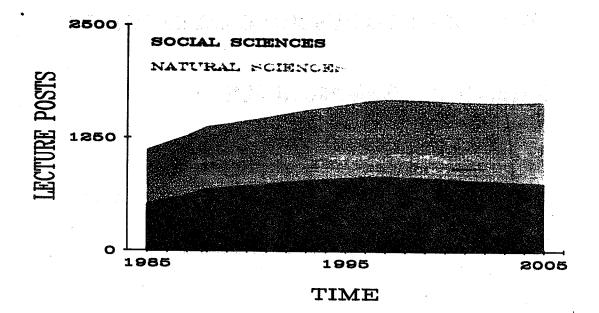
- * UNDERGRADUATE RECRUITEMENT FROM 1992
- * POST-GRADUATE RECRUITEMENT FROM 1988
- * SELECTION IN SOME CESM-CATEGORIES





- SCENARIO 3 * SAME AS SCENARIO 2
 - * ENHANCED RECRUITEMENT IN SOME **CESM-CATEGORIES**





OBSERVATIONS

1. SCENARIO 1 - STANDARD RUN

- * ABSORB SUBSIDY LOSSES UNTIL NUMBER OF STUDENTS AGAIN REACH 1986 LEVEL
- * NO GROWTH IN POST-GRADUATE STUDENTS

2. SCENARIO 2

- * SMALLER OVERSHOOT OF 1986 STUDENTS
- * MORE POST-GRADUATE STUDENTS
- * MORE PHYSICAL AND MATHEMATICAL SCIENCE STUDENTS

3. SCENARIO 3 - EQUILIBRIUM RUN

- * DESIRED DROP IN UNDERGRADUATE STUDENTS
- * GROWTH IN POST-GRADUATE STUDENTS MORE SUBSIDY
- * STABILIZING OF TOTAL NUMBER OF STUDENTS