THE AUSTRALIAN NATIONAL UNIVERSITY

FACULTY OF ECONOMICS

DEPARTMENT OF STATISTICS

ANNUAL REPORT 1977

General Comments and Courses

The research and teaching programme of the Statistics Department is concerned with mathematical statistics, econometrics, probability theory and operational research. The department can therefore be regarded as multidisciplinary in nature as it provides courses which in many universities would be found in two or three separate departments. Because of this structure the department finds particularly unwelcome the A.U.C. directive to hold constant the intake of new students into the university.

New ventures in 1977 included the introduction of a Masters Degree by Coursework and a new third year semester unit, Statistics CO8. The latter is designed as a research methods course for beginning postgraduate students and advanced undergraduates in the biological and social sciences and students enrolled originated mainly from the Departments of Forestry and Sociology. The syllabus emphasises statistical procedures (computational as well as conceptual) useful in these and related disciplines.

The Masters by Coursework programme was introduced this year on a part-time basis with an enrolment of five (part-time) students all of whom were employed in government instrumentalities. The course has been designed with a bias towards applications with the purpose of contributing to the training of Honours graduates in Mathematical Statistics for careers as consulting statisticians in industry and government. Statisticians from outside the university, particularly the Australian Bureau of Statistics and the CSIRO Division of Mathematics and Statistics, participated in the planning and teaching of the programme. The course will be offered on a full-time basis from 1978.

The Departments of Statistics and Computer Science are carrying out investigatory work in computer aided instruction (C.A.I.). A tutorial room has been equipped to allow the use in tutorial classes of the UNIVAC 1100/42 to illustrate some fundamental statistical concepts and was successfully used to a limited extent this year in the second semester unit Statistics B02. This work is supported by a recently appointed Assistant Programmer.

Two parallel sequences of lectures were offered in the first year first semester unit Statistics A01, one sequence with the three weekly lectures timetabled at 8 a.m. Some sixty students indicated that the holding of lectures at this hour was convenient due to timetable considerations or for reasons of employment and it is planned to continue with the arrangement in 1978.

The staff and students in Econometrics gained considerably from the presence of the two visitors (Professor C.W.J. Granger and Dr G.E. Mizon), an active seminar programme, and further publications in the series "Working Papers in Economics and Econometrics". The Mathematical Statistics group within the Department continued to participate in the research seminars organised jointly with the Department of Statistics IAS and the CSIRO Division of Mathematics and Statistics.

Research by members of the Department was mainly in the fields of applied probability (particularly limit theorems, branching processes and characteristic functions), multivariate analysis, non-standard maximum likelihood, robust estimation methods, changing parameter regressions, non-linear estimation methods and hypothesis testing, time dependent systems of equations, econometric model building and specification testing and Monte Carlo studies.

A Reserve Bank Economic and Financial Research Grant has been awarded to Dr Pagan and Professor Terrell to continue the construction of a data bank of economic time series. It is expected that this data bank will be completed in late 1978 and will assist the expansion of research work in applied economics by academic staff and postgraduate students throughout the university.

During his sabbatical leave, Dr E. Seneta has been continuing his research into "Linear Least Squares in Pre-Revolutionary Russia" supported by an A.R.G.C. Grant awarded for 1976.

The Departmental Committee has met regularly during the year with Dr Valentine, the Deputy Chairman, conducting these meetings. The committee has been assisted in its work by the constructive attitude of all members. Liaison Committees were set up in several semester units and this allowed students an opportunity to discuss their views on the organisation and course content of a unit with all involved in teaching that unit.

Enrolments and Examination Results

Total enrolments in the Statistics Department at 30 April 1977 increased by 32.6% overall. The postgraduate contribution increased by 40% whereas the undergraduate numbers decreased by 7.4%.

A table of comparative failure rates for students attempting final examinations is presented for the period 1973-1977 below.

Failure Rates, %

	Stats I	Stats II (Pass plus Honours)	Stats III (Pass plus Honours)	Operational Research
1973	16	12	10	10
1974	17	16	8	16
1975	11	10	7	13
1976	14	7	8	6
1977	15	8	5	12

The figures were drawn from those semester units most closely approximating the old full year units.

Final Honours students in Statistics achieved two H1 and two HIIA, with one joint Mathematics/Statistics result deferred until January 1978.

Graduate Students

There are twenty students enrolled for higher degrees; eleven for the Ph.D, four for the Masters degree (by thesis) and five for the Masters degree (by coursework) in Statistics.

Staff

Professor and Head of Department	-	C.R. Heathcote, B.A.(W.Aust.), M.A.(Melb.), Ph.D
Professor	-	R.D. Terrell, B.Ec.(Adel.), Ph.D
Reader	-	E. Seneta, M.Sc.(Adel.), Ph.D
Senior Lecturers	-	S.John, B.Sc.(Trav.), M.Sc.(Kerala), Ph.D (Indian Stat.Inst.)
	-	J.H.T. Morgan, B.A.(Cantab.), M.Sc. (Case Inst.Tech.)
	-	D.F. Nicholls, B.Sc.(New Eng.), Ph.D
	-	A.R. Pagan, B.Ec.(Q'ld.), Ph.D
	-	T.J. Valentine, B.Ec.(Syd.), M.A.(Princeton), Ph.D (Princeton)
	-	P.Winer, B.Sc.(Rand)
Lecturers	-	D.C. Chant, M.Sc.(Lond.), Ph.D
	-	T.J. O'Neill, B.Sc.(Adel.), M.S.(Stanford), Ph.D (Stanford)
Lecturing Fellow	-	A.D. Hall, B.Ec.(Adel.), M.Ec., Ph.D (Lond.)
Tutors	-	N. Frances MacNally, B.Sc.(Lond.)
		K.R. Sawyer, B.Sc.(W.Aust.), M.Ec.
Temporary Tutors	-	B.R. Clarke, B.Sc.(Flinders)
	-	R. Kohn, B.Sc.(Melb.), M.Ec. (from 14.9.77.)
Programmers		Patricia N. McCarter, B.Sc.(W.Aust.)
	-	J. Belinda Pearson, B.Sc.(Melb.), B.Ec.
Assistant Programmers	-	J. Honan, B.A. in Computing Studies (CCAE) (from 21.3.77. to 21.7.77.)
	-	A.D. Glenn, B.Sc. (from 2.9.77.)
Temporary Programmer	-	P. Robinson, B.Sc.(Q'ld.), Ph.D (from 5.10.77.)
Research Assistant	-	Ellen M. Ward, B.A. (Fordham)
Temporary Research Assistants (Reserve Bank Grant, R.D.Terrell and A.R.Pagan)	- -	T.T. Hoi, B.Sc.(Saigon), M.Agric.Dev.Econs. D.J. Carland, B.Ec.(La Trobe), M.Ec. (from 1.7.77. to 24.8.77.)

Visitors

Mr L.D. Kitt (Malaspina College, Vancouver, Canada) 6 June 1977 - June 1978.
Dr G.E. Mizon (London School of Economics) 10 July - 16 September, 1977.
Professor C.W.J. Granger (University of California, San Diego)
    8 August - 3 November, 1977, 383-400.

Publications

Heathcote, C.R., "The integrated squared error estimation of parameters",
    Biometrika, 64, 2, (1977), 255-264.

Feigin, P.D.* and Heathcote, C.R., "The empirical characteristic
    function and the Cramér-von Mises Statistic", Sankhya A, 38, 3,
    (1976),

John, S., "Fitting sampling distribution agreeing in support and moments
    and tables of critical values of sphericity criterion", Journal of
    Multivariate Analysis, 6, (1976), 601-607.

Pagan, A.R. and Nicholls, D.F., "Exact maximum likelihood estimation of
    regression models with finite order moving average errors", Review
    of Economic Studies, XLIII (3), (1976), 383-387.

Nicholls, D.F. and Pagan, A.R., "Specification of the disturbance for
    efficient estimation - an extended analysis", Econometrica, 45, 1,
    (1977), 211-218.

Nicholls, D.F., "A comparison of estimation methods for vector linear
    time series models", Biometrika, 64, 1, (1977), 85-90.

Heyde, C.C.* and Seneta, E., "Bienaymé", Bulletin of the International
    Statistical Institute. Proceedings of the 40th Session (Warsaw, 1975),
    46, Book 2, (1975), 318-331.

Seneta, E., "The condition of truncations of a stochastic matrix",
    Communications in Statistics. Simulation and Computation, B5,
    (1976), 144-145.

Seneta, E., "The principle of random union of gametes in a finite
    population", Combinatorial Mathematics IV. Lecture Notes in
    Mathematics, 560, (1976), 215-219, Springer-Verlag, Berlin.

Chatterjee, S.† and Seneta, E., "Towards consensus: Some convergence
    theorems on repeated averaging", Journal of Applied Probability,
    14, (1977), 89-97.

Tanaka, K., "On a new estimation method for time series models", The
    Economic Studies Quarterly, 28, 3, (1977), 201-213.

Valentine, T.J., "The demand for money and price expectations in
    Australia", The Journal of Finance, XXXII, 3, (1977), 735-748.

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* Former member of Department.

† Not a member of this University.

THE AUSTRALIAN NATIONAL UNIVERSITY
DEPARTMENT OF STATISTICS ANALYSIS OF STUDENT PERFORMANCE

FIRST SEMESTER

		Percentage of Number Enrolled			Percentage of Number Sitting						
Subject or Unit	Enrolled as at 30.4.77	Sitting	Wastage (i.e. 2-3)	Failure	Sitting	High Distinction	Distinction	Credit	Pass with Merit	Pass	Failure
AO1 No.	224	192	32	36	192	13	34	43		66	36
%	(100)	(86)	(14)	(16)	(100)	(7)	(18)	(22)		(34)	(19)
AO3 No.	115	97	18	9	97	6	27	28		27	9
%	(100)	(84)	(16)	(8)	(100)	(6)	(28)	(29)		(28)	(9)
BO1 No.	106	89	17	13	89				30	46	13
%	(100)	(84)	(16)	(12)	(100)				(34)	(52)	(14)
BO1H No.	10	10	0	0	10	5	2	2			1
%	(100)	(100)	(0)	(0)	(100)	(50)	(20)	(20)			(10)
CO1 No.	5	3	2	0	3						3
%	(100)	(60)	(40)	(0)	(100)						(100)
CO1H No.	3	3	0	0	3	1	1				1
%	(100)	(100)	(0)	(0)	(100)	(33)	(33)				(33)
CO3 No.	33	29	4	3	29				9	17	3
%	(100)	(88)	(12)	(9)	(100)				(31)	(59)	(10)
CO3H No.	3	3	0	1	3		1	1			1
%	(100)	(100)	(0)	(33)	(100)		(33)	(33)			(33)
CO5 No.	11	6	5	1	6				3	2	1
%	(100)	(55)	(45)	(9)	(100)				(50)	(33)	(17)
CO5H No.	7	5	2	1	5		2	1		1	1
%	(100)	(71)	(29)	(14)	(100)		(40)	(20)		(20)	(20)
CO7 No.	2	2	0	0	2		1	1			
%	(100)	(100)	(0)	(0)	(100)		(50)	(50)			
CO8 No.	10	9	1	0	9		1	5			3
%	(100)	(90)	(10)	(0)	(100)		(11)	(56)			(33)

THE AUSTRALIAN NATIONAL UNIVERSITY

DEPARTMENT OF STATISTICS ANALYSIS OF STUDENT PERFORMANCE

SECOND SEMESTER

		Percentage of Number Enrolled				Percentage of Number Sitting						
Subject or Unit		Enrolled as at July 77	Sitting	Wastage (i.e. 2-3)	Failure	Sitting	High Distinction	Distinction	Credit	Pass With Merit	Pass	Failure
A01	No.	188*	158	30	33	158	9	18	32		66	33
	%	(100)	(84)	(16)	(18)	(100)	(6)	(11)	(20)		(42)	(21)
A02	No.	182*	159	23	18	159	16	27	35		63	18
	%	(100)	(87)	(13)	(10)	(100)	(10)	(17)	(22)		(40)	(11)
B02	No.	36	26	10	0	26				10	16	0
	%	(100)	(72)	(28)	(0)	(100)				(38)	(62)	(0)
B02H	No.	6	4	2	0	4	2	1	1			
	%	(100)	(67)	(33)	-	(100)	(50)	(25)	(25)			
B03	No.	26	17	9	2	17				7	8	2
	%	(100)	(65)	(35)	(8)	(100)				(41)	(47)	(12)
B03H	No.	13	13	0	1	13	3	2	5		2	1
	%	(100)	(100)	-	(8)	(100)	(23)	(15)	(39)		(15)	(8)
B04	No.	28	28	0	1	28	1	5	9		12	1
	%	(100)	(100)	-	(4)	(100)	(4)	(18)	(32)		(43)	(4)
C02	No.	2	1	1	0	1					1	
	%	(100)	(50)	(50)	-	(100)					(100)	
C02H	No.	2	1	1	0	1		1				
	%	(100)	(50)	(50)	-	(100)		(100)				

* Does not include M.A.D.E. or M.A.S. qualifying students.

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SECOND SEMESTER

Subject or Unit		Enrolled as at July 77	Percentage of Number Enrolled			Percentage of Number Sitting						
			Sitting	Wastage (i.e. 2-3)	Failure	Sitting	High Distinction	Distinction	Credit	Pass With Merit	Pass	Failure
C04	No.	19	16	3	3	16				2	11	3
	%	(100)	(84)	(16)	(16)	(100)				(12)	(69)	(19)
C04H	No.	4	2	2	0	2	1	1				
	%	(100)	(50)	(50)	-	(100)	(50)	(50)				
C06	No.	6	6	0	0	6				1	5	
	%	(100)	(100)	-	-	(100)				(17)	(83)	
C06H	No.	6	6	0	0	6	1	3	2			
	%	(100)	(100)	-	-	(100)	(17)	(50)	(33)			

	Enrolled (as at 30.4.77)	Sitting	Results
Final Honours	4	4	**2 HI, 2 HIIA**
Masters Qualifying	4	-	4 W/D
Masters Degree by Coursework P/T	4	-	1 excluded
Masters Degree	4	1	-
Ph.D.	9	2	-