

**NATIONAL SCIENCE FOUNDATION
INDUSTRY/UNIVERSITY
COOPERATIVE RESEARCH CENTERS**

FINAL DRAFT

**1990-91 PROCESS OUTCOME
SURVEY RESULTS**

**DESCRIPTIVE STATISTICS
COMPILED FROM
FACULTY AND INDUSTRY FORMS:
LONG AND SHORT VERSIONS**

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FINAL DRAFT

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**NOTE: PLEASE DO NOT QUOTE OR CITE WITHOUT
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OVERVIEW**The Sample**

The final response rate: 35/40 "applicable" centers (88%).

Faculty Short: 176 cases	Industry Short: 258 cases
Faculty Long: 127 cases	Industry Long: 126 cases
Totals: 303 Faculty	384 Industry

Notes

All of the data included in the 1990 data set reflects respondent reports of activity for their center for 1990-91. The data are presented in the same order as they appear in their respective questionnaires (i.e., Faculty Long or Industry Long). Please note that the varying response rates are due to:

- a) Some questions are not included in the short form (See Appendices for cross-referencing and to determine which items are considered in both versions).
- b) Missing Data.

Also, please recall that the "Long" Version questionnaires are required after a center's first and third year of operation. Thus, the subsample responding to the "long form" will tend to be different (younger) than the total sample.

Five Industry Form questions (19A, 19B, 20A2, 25A, & 25B) warranted the reporting of means in two ways: 1) based on respondents who reported some activity only; and 2) based on all respondents (those reporting no means were treated as if they reported zero).

A new addition to these tables are the appendices attached to aid in cross-referencing between variable names, versions, and forms. For instance, the Faculty Form, Long Version question 5E can be found in the LONG VERSION DATA SET in 66 (first row on each record). Note that if a 2 were indicated in parentheses (see Appendix A), then one would be referring to the second row of data. In addition, the exact same question is in column 11 on the SHORT VERSION. This particular item has been dubbed INNOVSAT for data analysis purposes (see Appendices A & B for complete reference guide for both Forms, respectively).

Final notes: a) All items/questions on the short form are also on the long form; b) the sum of group percentages may exceed 100% due to rounding.

1990-91 FACULTY RESULTS

	<u>N</u>			<u>%</u>	
1. In general, how much experience do you have working with industry?					
A great deal	52			41	
A moderate amount	36			29	
A little	34			27	
None at all	4			3	
2a. Academic Rank					
Assistant	31			25	
Associate	36			29	
Full	50			40	
Other	7			6	
2b. Is Respondent Tenured?					
Tenured	77			61	
Not Tenured	49			39	
Respondent in Tenure-Track Position?					
No	36			75	
Yes	12			25	
3. Percent Allocation of FTE:	<u>MEAN</u>			<u>SD</u>	
Center-Funded Research	22.1			22.0	
Non-Center Research	29.2			24.0	
Teaching	36.6			24.6	
Administration	26.3			31.7	
Other	27.4			36.9	
4. Extent of University Influence on Decisions Affecting the Center:					
		<i>No</i>	<i>Some</i>	<i>A lot of</i>	<i>Almost</i>
		<i>Influence</i>	<i>Influence</i>	<i>Influence</i>	<i>Complete</i>
		1	2	3	4
	<u>MEAN</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Planning and Strategy	1.6	47	47	47	47
Project Selection	1.1	96	94	4	4
Conduct of Research	1.2	86	85	12	12
Evaluation of Research	1.2	86	84	13	13
Budget and Logistics	1.9	35	35	43	43
Appointments of Faculty and Staff	2.3	35	35	25	25
		22	22	22	22
		19	19	19	19

4b. Extent of Center Director Influence on Decisions Affecting the Center:

	<u>MEAN</u>	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		1		2		3		4	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Planning and Strategy	3.0	5	5	12	12	64	62	23	22
Project Selection	2.7	6	6	24	23	67	64	7	7
Conduct of Research	2.1	24	23	54	52	22	22	4	4
Evaluation of Research	2.6	8	8	35	35	50	50	8	8
Budget and Logistics	3.0	7	7	15	14	57	54	27	26
Appointments of Faculty and Staff	2.4	20	20	29	29	44	44	8	8

4c. Extent of Faculty Influence on Decisions Affecting the Center:

	<u>MEAN</u>	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		1		2		3		4	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Plan.. and Strategy	2.2	15	15	55	53	30	29	3	3
Project Selection	2.2	26	24	36	34	42	39	3	3
Conduct of Research	3.3	5	5	7	7	43	41	51	48
Eval. of Research	2.3	25	24	32	31	41	39	6	6
Budget and Logistics	2.1	21	20	54	52	24	23	5	5
Appointments of Faculty and Staff	2.2	23	23	38	37	36	35	5	5

4d. Extent of Industry Advisory Board Influence on Decisions Affecting the Center:

	MEAN	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		N	%	N	%	N	%	N	%
Plan. and Strategy	2.7	5	5	27	26	66	64	6	6
Project Selection	3.1	4	4	10	9	67	63	25	24
Conduct of Research	2.0	22	21	60	58	20	19	2	2
Eval. of Research	3.0	5	5	14	14	65	63	20	19
Budget and Logistics	2.3	17	17	39	38	42	41	4	4
Appoint. of Faculty and Staff	1.4	64	65	25	26	9	9	0	0

4e. Extent of Student Influence on Decisions Affecting the Center:

	MEAN	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		N	%	N	%	N	%	N	%
Planning and Strategy	1.3	80	78	19	19	2	2	1	1
Project Selection	1.2	83	80	19	18	1	1	1	1
Conduct of Research	2.1	29	28	39	38	32	31	3	3
Eval. of Research	1.4	70	69	28	28	2	2	2	2
Budget and Logistics	1.1	92	91	7	7	1	1	1	1
Appoint. of Faculty and Staff	1.1	86	92	6	6	2	2	0	0

4f. Extent of Established University Procedures Influence on Decisions Affecting the Center:

	MEAN	No Influence		Some Influence		A lot of Influence		Almost Complete Control	
		1		2		3		4	
		N	%	N	%	N	%	N	%
Planning and Strategy	1.7	38	40	51	53	7	7	0	0
Project Selection	1.2	85	87	11	11	6	6	0	0
Conduct of Research	1.4	66	68	25	26	5	5	0	0
Evaluation of Research	1.2	84	86	12	12	1	1	1	1
Budget and Logistics	1.8	43	46	33	35	14	15	4	4
Appoint. of Faculty and Staff	2.0	36	40	28	31	20	22	7	8

5. During the past year how satisfied were you with the following features of the Center?

	MEAN	Completely Satisfied		A Great Deal Satisfied		Somewhat Satisfied		Not At All Satisfied	
		1		2		3		4	
		N	%	N	%	N	%	N	%
Technical quality of the research	3.1	79	27	158	54	51	17	6	2
Commun. between Staff and Industry	2.8	56	20	133	47	79	28	18	6
Center Administ. practices	2.8	65	22	130	44	69	23	32	11
Responsiveness to Industry needs	3.0	69	25	146	53	57	21	3	1
Innovative quality of research	3.0	72	25	147	50	63	22	11	4
Project selection process	2.8	65	22	131	45	82	28	16	5

6. How important to you are the following goals and outcomes of the Center?

	MEAN	<i>Extremely Important</i>		<i>Considerably Important</i>		<i>Somewhat Important</i>		<i>Not at all Important</i>	
		4		3		2		1	
		N	%	N	%	N	%	N	%
General expansion of knowledge in this technical area	3.7	91	72	31	25	4	3	0	0
Enhancement of graduate students' technical training	3.2	57	45	46	36	18	14	6	5
Enhancement of graduate students' understanding of industry	2.7	24	19	48	38	53	42	2	2
Redirection of university research toward industrial problems	2.6	23	18	44	35	46	37	13	10
Enhancement of quality of industrial research	2.9	28	22	67	53	23	18	9	7
Development of new research projects	2.5	16	13	42	34	55	44	12	10
Development of patentable products	1.9	4	3	26	21	52	42	43	34
Development of commercialized products	1.9	4	3	26	21	46	37	50	40

7. Compared to the research you typically conduct outside the Center, would you describe your Center-funded research as:

	MEAN	<i>More Basic</i>		<i>No Effect</i>		<i>More Applied</i>					
		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Basic or Applied	3.6	0	0	10	8	49	40	42	34	23	19
		<i>Broader</i>						<i>Narrower</i>			
Broader or Narrower in Scope	3.3	5	4	22	18	44	36	42	34	11	9
		<i>Longer</i>						<i>Shorter</i>			
Time Frame	3.2	7	6	24	20	48	39	33	27	12	10

8. What effect has participation in the Center had for you in the following areas:

	MEAN	Negative Effect				No Effect				Positive Effect		
		N	1		2		3		4		5	
			%	N	%	N	%	N	%	N	%	
Opportunities for Consulting	3.4	1	0	8	3	190	64	71	24	29	10	
Opportunities for Research Contracts	3.8	1	0	9	3	102	34	120	40	69	23	
Access to Equip	3.7	1	0	3	1	136	45	96	32	65	22	
Trust and Conf. in Industry	3.7	0	0	9	3	108	36	137	46	46	15	
Evaluation of the Quality of Industrial Research	3.5	3	1	19	7	130	43	118	40	29	10	
Chances for Promotion/ Tenure & Salary Increases	3.5	2	1	16	5	140	47	109	36	33	11	
Amount of Inter-action with Other Faculty	4.0	1	0	8	3	50	17	167	56	75	25	
Ability to Support Student Theses/ Dissertation Research	4.1	4	1	7	2	56	19	109	36	124	41	
Amt. of Autonomy in Conducting Research	3.4	13	4	41	14	103	34	93	31	50	17	
Ability to Publish in a Timely Fashion	3.4	8	3	36	12	127	42	86	29	43	14	

9. What effect has participation in the Center had for the university in the following areas?

	MEAN	Negative Effect				No Effect				Positive Effect	
		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Knowledge Base	4.1	0	0	0	0	18	15	72	61	29	24
Student Recruit.	3.9	0	0	1	1	41	35	52	44	24	20
Faculty Recruit.	3.7	0	0	0	0	53	46	46	40	17	15
Qual. of Research Projects in the University	3.9	0	0	4	3	30	25	57	48	27	23
Res. Funds from Private Sources	4.1	0	0	0	0	25	21	56	48	37	31
Res. Funds from Public Sources	3.8	0	0	2	2	43	36	54	46	19	16
University Patent	3.5	0	0	0	0	68	60	38	33	9	8

10. Compared to other forms of research funding you have received in the past, how would you rate this Center on the following dimensions?

	MEAN	Compares Favorably		About the Same		Compares Unfavorably	
		1		2		3	
		N	%	N	%	N	%
Amount of work invested to obtain funding	1.7	62	52	36	30	22	18
Administrative time/effort invested in project	1.9	41	35	44	37	34	29
Likelihood funding will be avail. to support my long range goals	1.8	42	35	57	48	21	18
Amount of funding provided to conduct research	2.0	34	28	52	43	34	28
Budgetary flexibility	1.8	52	44	43	36	24	20

11a. During the past year, how many publications in the open literature have you had based on center research?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
293	2.5	2	3.2

b. How many of these were with company scientists?

267	0.5	0	1.6
-----	-----	---	-----

c. With students?

274	2.3	1	2.9
-----	-----	---	-----

12a. During the past year, how many presentations have you made at conferences or professional meetings based on center research?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
292	2.9	2	3.3

b. How many were with company scientists?

275	0.5	0	1.3
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c. With students?

279	2.2	1	3.1
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13a. During the past year, how many students theses/dissertations based on Center research were completed under your supervision?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
288	0.8	0	1.5

b. How many of these are currently in progress?

291	1.7	1	2.0
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14a. Excluding Center board/monitor meetings, how many times during the past year did you personally have contact with individuals from other companies?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
1. By phone?	281	15.1	5	24.9
2. In person?	283	8.7	3	18.8

b. During the last year, how many days have you spent visiting or working at member company laboratories?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of Days	275	5.9	1	15.3

15. How long, on average, do you feel that it should take for a new Center research project to yield tangible results?

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
Number of months	275	22.1	18	19.4

16. To what extent are you generally satisfied with the operation and activities of the Center?

<u>MEAN</u>	<i>Completely Satisfied</i>		<i>Considerably Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at all Satisfied</i>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
3.0	68	24	143	51	59	21	9	3

INDUSTRY RESULTS FOLLOW

1990-91 INDUSTRY RESULTS

	N	MEAN	MED.	SD
1. How many years have you spent with the company?	124	15.3	14	9.6
2. How many years have you spent in R&D with the company?	124	11.2	9	8.5
3. How many years have you spent in industry in general?	124	20.1	20	9.3
4. How many years have you spent in R&D with industry?	124	14.3	14	9.2

5a. What is the highest degree you have received?	N	%
High School	6	6
AA/AS	11	10
BA/BS	40	37
MA/MS	28	26
Ph.D.	18	21

b. In what field?

Engineering	82	66
Physical Science	26	21
Social Science	0	0
Liberal Arts	2	2
Management	6	5
Other	8	7

6. Coursework from universty where Center is located?

Yes	28	23
No	96	77

	N	MEAN	SD
7. How many years have you been a board member?	122	2.3	1.4

8. Were you a board member when your company joined the Center?	N	%
Yes	74	60
No	50	40

9. To what extent do you have scientific/technical expertise in the research areas being investigated within the Center?

Degree of technical expertise:

	<u>FREQ</u>	<u>%</u>
In (almost) no areas	3	3
In a few areas	18	15
About half	33	27
In most areas	67	54
In all areas	3	2

10. How involved were you in the establishment of the Center?

Not at all	77	62
A little	17	13
A modest amount	14	11
A great deal	16	13

11. How frequently do you disseminate Center technical reports and updates to the following groups?

	<u>MEAN</u>	<i>Never</i>		<i>1-2/year</i>		<i>3-4 year</i>		<i>5+/year</i>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Technical staff in your group	2.9	11	3	121	33	108	31	116	33
Technical staff in your division	2.7	26	7	156	43	93	26	88	24
Technical staff in other divisions	2.2	78	22	174	49	61	17	43	12
Your immediate supervisor	2.3	71	20	162	45	69	19	62	17
Top corporate management	1.5	207	58	116	33	20	6	13	4

13. During the past year, how would you rate the overall research program in the Center compared to similar research programs in other U.S. universities?

	<u>MEAN</u>	<u>N</u>	<u>%</u>
Top 2% (4)	2.7	52	15
Top 10% (3)		148	42
Above average (2)		142	41
Below average (1)		6	2
Not comparable (9)		18	6

14. During the past year how satisfied were you with the following features of the Center?

	<u>MEAN</u>	A							
		<i>Completely Satisfied</i>		<i>Great Deal Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at All Satisfied</i>	
		4	3	2	1				
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Technical quality of the research	3.1	80	21	248	65	51	13	1	0
Communication between Center staff and your company	3.0	119	31	159	42	90	23	11	3
Center administrative practices	3.1	124	33	160	42	83	22	10	3
Responsiveness of the Center to industry needs	2.9	91	24	178	48	99	26	7	2
Innovative quality of research	2.9	71	19	211	56	90	24	5	1
Proj. selection process	2.8	78	21	168	45	117	31	12	3

17. How important to you are the following goals and outcomes of the Center?

	<u>MEAN</u>	<i>Extremely Important</i> 4		<i>Considerably Important</i> 3		<i>Somewhat Important</i> 2		<i>Not at all Important</i> 1	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Gen. expansion of knowledge in this tech. area	3.5	74	60	40	32	9	7	1	1
Enhancement of grad. student tech. training	2.9	27	22	62	50	29	23	7	6
Enhancement of grad. students' understanding of industry	2.9	28	22	60	48	29	23	8	6
Redirection of university res. towards indust. problems	3.2	53	42	51	41	21	17	1	1
Enhancement of quality of indust. research	3.3	55	44	48	38	21	17	1	1
Development of new company res. projects	2.7	31	25	38	20	41	33	15	12
Development of patentable products	1.8	5	4	17	14	54	43	49	40
Development of commercialized products	2.0	11	9	23	18	42	37	49	39

18. How long, on average, do you feel that it should take for a new Center research project to yield tangible results?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of months	370	22.8	24	11.3

19a. During the past year, approximately how many new research projects have been stimulated in your Division's research laboratories by Center activities?

NUMBER OF PROJECTS

	N	Mean	Median	SD
<i>entire sample</i>	330	1.0	1.0	1.3
<i>those responding at least 1</i>	180	1.9	2.0	1.1

b. RESEARCH DOLLARS (in thousands)

	N	Mean	Median	SD
<i>entire sample</i>	330	105.7	0.0	469.4
<i>those responding at least 1</i>	142	226.0	100.0	675.2
<i>research dollars per project</i>	142	128.3	50	440.3

20a. During the past year, has participation in the Center activities stimulated additional research contracts with faculty?

	N	%
Yes	112	33
No	223	67

If yes, approximately how many research dollars (in thousands)?

	N	Mean	Median	SD
<i>entire sample</i>	119	67.0	20.0	204.8
<i>those responding "yes" to 20a</i>	104	76.5	25.0	217.6

b. During the past year, has participation in the Center activities stimulated research contracts with other laboratories or researchers?

	N	%
Yes	62	21
No	238	79

If yes, approximately how many research dollars (in thousands)?

N	MEAN	MEDIAN	SD
44	131.5	50	213.6

21. During the past year, to what extent has the research conducted at the Center caused changes in the R&D projects in your company?

	<u>MEAN</u>	<i>A Lot</i> 4		<i>Some</i> 3		<i>A Little</i> 2		<i>Hardly Any</i> 1	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Research topics and issues	2.0	16	4	100	27	124	33	134	36
Research methods and procedures used	1.8	7	2	83	23	113	31	166	45
Criteria methods used to evaluate the research projects	1.5	3	1	49	13	83	23	233	63

23. What percentage of the Center research projects do you take interest in and monitor closely?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
370	42.2	35	26.9

24. During the past year, has your participation in the Center produced any of the following benefits to your company?

	<u>MEAN</u>	<i>Significant Effect</i> 3		<i>Moderate Effect</i> 2		<i>No Effect</i> 1	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Improvements in products and services	1.4	13	4	107	36	176	60
New products developed due to related efforts	1.3	13	5	69	25	200	71
Reduction of production costs	1.3	10	4	48	17	213	79
Improvements in processes and methods of production	1.4	13	5	95	34	171	61

(item 24 cont ->)

	MEAN	Significant Effect 3		Moderate Effect 2		No Effect 1	
		N	%	N	%	N	%
Better personnel recruit.	1.5	31	10	104	34	168	55
Improved abil. to cooperate with outside scientists	1.8	40	12	203	60	95	28
Increased interaction with other companies	2.0	78	22	191	54	82	23
Increased interaction with University faculty	2.2	116	32	199	56	43	12

25a. During the past year, how many students trained in the center research projects have been interviewed for possible employment in your company?

	N	Mean	Median	SD
entire sample	322	.95	0.0	1.7
those responding at least 1	128	2.4	2.0	1.9

b. How many have actually been hired?

	N	Mean	Median	SD
entire sample	305	.24	0.0	.74
those responding at least 1	51	1.5	1.0	1.2

28. Excluding Center board/monitor meetings, how many times during the past year did you personally have contact with faculty affiliated with the Center?

	N	MEAN	MEDIAN	SD
a. By phone	377	7.6	5	11.0
b. In person	369	3.4	2	7.2

29. What effect has your participation in the Center had on the following:

	<u>MEAN</u>	<i>Negative Effect</i>				<i>No Effect</i>				<i>Positive Effect</i>	
		<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Trust and confid. in the University	4.2	1	0	9	2	59	16	166	44	139	37
My evaluation of the quality of university research	4.1	1	1	7	2	65	17	189	50	113	30
Chances for career advancement, promotion and salary increases	3.2	4	1	3	1	286	78	62	17	12	3

30. To what extent are you generally satisfied with the operation and activities of the Center?

<u>MEAN</u>	<i>Completely Satisfied</i>		<i>Considerably Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at all Satisfied</i>	
	<u>4</u>		<u>3</u>		<u>2</u>		<u>1</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
3.0	74	20	229	61	66	18	6	2

31. What's the likelihood your firm will renew its membership?

	<u>N</u>	<u>%</u>	<u>MEAN</u>
Almost certain	150	42	3.2
Very likely	131	37	
Uncertain	58	16	
Unlikely	16	5	

END ANALYSES

APPENDICES FOLLOW

APPENDIX A

FACULTY CROSS-REFERENCE GUIDE (BY FACULTY LONG QUESTIONNAIRE)

<u>QUESTIONNAIRE</u>		<u>DATA SET COLUMN</u>			<u>Valid</u>
<u>LONG</u>	<u>SHORT</u>	<u>LONG</u>	<u>SHORT</u>	<u>FACULTY VAR</u>	<u>Range</u>
1		7		INDEXP	1-4
2 a		8		ACDRANK	1-4
2 b		9		TENURE	1-2
2 b 2		10		TRACK	1-2
3 a		11-13		PERCTIME	000-100
3 b		14-16		PERNCR	000-100
3 c		17-19		PERTEACH	000-100
3 d		20-22		PERADM	000-100
3 e		23-25		PEROTHER	000-100
4 a 1		26		PLANUNIV	1-4
4 a 2		27		PLANCENT	1-4
4 a 3		28		PLANFAC	1-4
4 a 4		29		PLANBD	1-4
4 a 5		30		PLANSTUD	1-4
4 a 6		31		PLANPROC	1-4
4 b 1		32		PROJUNIV	1-4
4 b 2		33		PROJCENT	1-4
4 b 3		34		PROJFAC	1-4
4 b 4		35		PROJBD	1-4
4 b 5		36		PROJSTUD	1-4
4 b 6		37		PROJPROC	1-4
4 c 2		39		RESCENT	1-4
4 c 3		40		RESFAC	1-4
4 c 4		41		RESBD	1-4
4 c 5		42		RESSTUD	1-4
4 c 6		43		RESPROC	1-4
4 c a		38		RESUNIV	1-4
4 d 1		44		EVALUNIV	1-4
4 d 2		45		EVALCENT	1-4
4 d 3		46		EVALFAC	1-4
4 d 4		47		EVALBD	1-4
4 d 5		48		EVALSTUD	1-4
4 d 6		49		EVALPROC	1-4
4 e 1		50		BUDGUNIV	1-4
4 e 2		51		BUDGCENT	1-4
4 e 3		52		BUDGFAC	1-4
4 e 4		53		BUDGBD	1-4
4 e 5		54		BUDGSTUD	1-4
4 e 6		55		BUDGPROC	1-4
4 f 1		56		APPTUNIV	1-4
4 f 2		57		APPTCENT	1-4
4 f 3		58		APPTFAC	1-4
4 f 4		59		APPTBD	1-4

(faculty
cont ->)

<u>QUES. LONG</u>	<u>QUES. SHORT</u>	<u>COL. LONG</u>	<u>COL. SHORT</u>	<u>FACULTY VAR</u>	<u>Valid Range</u>
4f5		60		APPTSTUD	1-4
4f6		61		APPTPROC	1-4
5a	1a	62	7	ISATTECH	1-4
5b	1b	63	8	ISATCOMM	1-4
5c	1c	64	9	ISATADM	1-4
5d	1d	65	10	ISATRESP	1-4
5e	1e	66	11	INNOVSAT	1-4
5f	1f	67	12	PROJSAT	1-4
6a		68		IGENKNOW	1-4
6b		69		ISTUTECH	1-4
6c		70		ISTUIND	1-4
6d		71		IDIRECT	1-4
6e		72		IQUALITY	1-4
6f		73		INNEWPROJ	1-4
6g		74		IPATENTS	1-4
6h		75		ICOMPROD	1-4
7a		7(2)		BASIC	1-5
7b		8(2)		SCOPE	1-5
7c		9(2)		FRAME	1-5
8a	2a	10(2)	13	ECONSULT	1-5
8b	2b	11(2)	14	ERESCON	1-5
8c	2c	12(2)	15	EACCESS	1-5
8d	2d	13(2)	16	ETRUST	1-5
8e	2e	14(2)	17	EEVAL	1-5
8f	2f	15(2)	18	EPROMO	1-5
8g	2g	16(2)	19	EINTER	1-5
8h	2h	17(2)	20	ESTUD	1-5
8i	2i	18(2)	21	EAUTO	1-5
8j	2j	19(2)	22	EPUBLISH	1-5
9a		20(2)		EKNOW	1-5
9b		21(2)		ESTUDREC	1-5
9c		22(2)		EFACREC	1-5
9d		23(2)		ERESPROJ	1-5
9e		24(2)		EPRIV	1-5
9f		25(2)		EPUB	1-5
9g		26(2)		EPATENT	1-5
10a		27(2)		COMWORK	1-3
10b		28(2)		COMADMIN	1-3
10c		29(2)		COMLIKE	1-3
10d		30(2)		COMAMT	1-3
10e		31(2)		COMFLEX	1-3
11a	3a	32-33(2)	23-24	NPUBS	00-99
11b	3b	34-35(2)	25-26	PUBSCI	00-99
11c	3c	36-37(2)	27-28	PUBSTUD	00-99
12a	4a	38-39(2)	29-30	PRESCONF	00-99
12b	4b	40-41(2)	31-32	PRESSCI	00-99

(faculty
cont ->)

<u>QUES. LONG</u>	<u>QUES. SHORT</u>	<u>COL. LONG</u>	<u>COL. SHORT</u>	<u>FACULTY_VAR</u>	<u>Valid Range</u>
14a1	6a1	48-50(2)	39-40	PHONE**	000-999
14a2	6a2	51-53(2)	41-42	PERSON**	00-99
14b	6b	54-56(2)	43-44	VISITS**	00-99
15	7	57-59(2)	45-46	YIELD**	00-99
16	8	60(2)	47	GENSAT	1-4
17	9	61-62(2)	48-49	SUGGESTS	00-99
18		63-64(2)		MILES	00-99
19		65-66(2)		RECOMMS	00-99

***=THESE FOUR VARIABLES WERE ASSIGNED DIFFERENT COLUMN WIDTHS ON LONG AND SHORT DATA SETS/QUESTIONNAIRE. PLEASE ONLY USE 2 COLUMNS ON LONG FORM NOT 3, THUS THE MAXIMUM ALLOWABLE IS 99. RESPONSES ENTERED 100 AND ABOVE MUST BE RECODED TO 99.

FINAL NOTE: columns 1-6 are always reserved for id numbers (ID).

APPENDIX B

INDUSTRY CROSS-REFERENCE GUIDE (BY INDUSTRY LONG QUESTIONNAIRE)

<u>QUESTIONNAIRE</u>		<u>DATA SET COLUMN</u>		<u>INDUSTRY VAR</u>	<u>Valid Range</u>
<u>LONG</u>	<u>SHORT</u>	<u>LONG</u>	<u>SHORT</u>		
1		7-8		YRSCO	00-99
2		9-10		YRSRDCO	00-99
3		11-12		YRSIND	00-99
4		13-14		YRSRDIND	00-99
5 a		15		DEGREE	0-9
5 b		16		FIELD	1-6
6		17		ATTENDED	1-2
7		18		YRSBM	0-9
8		19		BOARDM	1-2
9		20		DRGTECH	1-5
10		21		INVOL	1-4
11 a	1 a	22	7	TECHGRP	1-4
11 b	1 b	23	8	TECHDIV	1-4
11 c	1 c	24	9	TECHOTH	1-4
11 d	1 d	25	10	YOURSUP	1-4
11 e	1 f	26	11	TOPMGMT	1-4
12	2	27-28	12-13	METHODS	00-99
13	3	29	14	RATEPROG	1-4,9
14 a	4 a	30	15	ISATTECH	1-4
14 b	4 b	31	16	ISATCOMM	1-4
14 c	4 c	32	17	ISATADM	1-4
14 d	4 d	33	18	ISATRESP	1-4
14 e	4 e	34	19	INNOVSAT	1-4
14 f	4 f	35	20	PROJSAT	1-4
15	5	36-37	21-22	PARTSAT	00-99
16	6	38-39	23-24	PARTDIS	00-99
17 a		40		IGENKNOW	1-4
17 b		41		ISTUTECH	1-4
17 c		42		ISTUIND	1-4
17 d		43		IDIRECT	1-4
17 e		44		IQUALITY	1-4
17 f		45		INEWPROJ	1-4
17 g		46		IPATENTS	1-4
17 h		47		ICOMPROD	1-4
18	7	48-50	25-27	YIELD	000-999
19 a	8 a	51-52	28-29	NEWRES	00-99
19 b	8 b	53-56	30-33	RESDOL	0000-9999
20 a1	9 a a	57	34	OUTCON	1-2,9
20 a2	9 a	58-61	35-38	ODOLLARS	0000-9999
20 b1	9 b b	62	39	OUTLABS	1-2,9
20 b2	9 b	63-66	40-43	OUTL	0000-9999
21 a	10 a	67	44	DIFTOPIC	1-4
21 b	10 b	68	45	DIFMETH	1-4
21 c	10 c	69	46	DIFEVAL	1-4

(industry
cont ->)

<u>QUES. LONG</u>	<u>QUES. SHORT</u>	<u>COL. LONG</u>	<u>COL. SHORT</u>	<u>INDUSTRY VAR</u>	<u>Valid Range</u>
2 2	11	70-71	47-48	SPCHANGE	00-99
2 3	12	72-74	49-51	PERINT	000-999
2 4 a	13a	7(2)	52	IPRODIMP	1-3,9
2 4 b	13b	8(2)	53	INEWPROD	1-3,9
2 4 c	13c	9(2)	54	IPROCOST	1-3,9
2 4 d	13d	10(2)	55	IPROCSS	1-3,9
2 4 e	13e	11(2)	56	RECRUIT	1-3,9
2 4 f	13f	12(2)	57	ICOOP	1-3,9
2 4 g	13g	13(2)	58	INTERACT	1-3,9
2 4 h	13h	14(2)	59	INTERFAC	1-3,9
2 5 a	14a	15-16(2)	60-61	STUDINT	00-99
2 5 b	14b	17-18(2)	62-63	STUDHIR	00-99
2 6	15	19-21(2)	64-66	UNIVATCO	000-999
2 7	16	22-24(2)	67-69	COATUNIV	000-999
2 8 a	17a	25-26(2)	70-71	PHONE	00-99
2 8 b	17b	27-28(2)	72-73	PERSON	00-99
2 9 a	18a	29(2)	74	ETRUST	1-5
2 9 b	18b	30(2)	75	EEVAL	1-5
2 9 c	18c	31(2)	76	EPROMO	1-5
3 0	19	32(2)	77	GENSAT	1-4
3 1 a	20a	34-35(2)	8-9(2)	NORENEW	00-99
3 1 a a	20	33(2)	7(2)	RENEW	1-4
3 1 b	20b	36-37(2)	10-11(2)	CENTERDO	00-99
3 2	21	38-39(2)	12-13(2)	SIGNYR	00-99
3 3	22	40-41(2)	14-15(2)	SUGGESTS	00-99

APPENDIX C

1990-91 DATA SET PARAMETERS

(TOTAL CASES: 303 faculty; 384 industry)

FACULTY SHORT (1 row of data per case; 49 columns total)

Row 1 only: 49 columns

Number of Variables: 31

Number of Cases: 176

FACULTY LONG (2 rows of data per case; 141 columns total)

Row 1: 75 columns

Row 2: 66 columns

Number of Variables: 101

Number of Cases: 127

INDUSTRY SHORT (2 rows of data per case; 92 columns total)

Row 1: 77 columns

Row 2: 15 columns

Number of Variables: 51

Number of Cases: 258

INDUSTRY LONG (2 rows of data per case; 115 columns total)

Row 1: 74 columns

Row 2: 41 columns

Number of Variables: 70

Number of Cases: 126