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REVIEW OF REVISED GERD DATA

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SUMMARY

1. The national GERD series have been revised by the Science Statistics Centre and estimates for 1978 are now available. 1978 GERD is estimated at \$2,178 million.
2. The revisions to GERD are largely confined to higher estimates of R&D performed at universities and the addition of a private non-profit performing sector. Most of the increase to university R&D is attributable to a "funders approach" to sponsored R&D and changes in the aggregate estimate of R&D performed by universities.
3. In terms of percentage of GERD to GNP, the revised 1977 level of \$2,000 million represents 0.95 per cent of GNP, higher than previously estimated, and the 1978 ratio is 0.935 per cent.

Introduction

This paper presents revised GERD statistics prepared by the Science Statistics Centre, Statistics Canada.

These data are scheduled to appear in the Annual Review of Science Statistics, to be released in the new year.

The purpose of this review is to make the GERD statistics more readily available within the Ministry for review and comment.

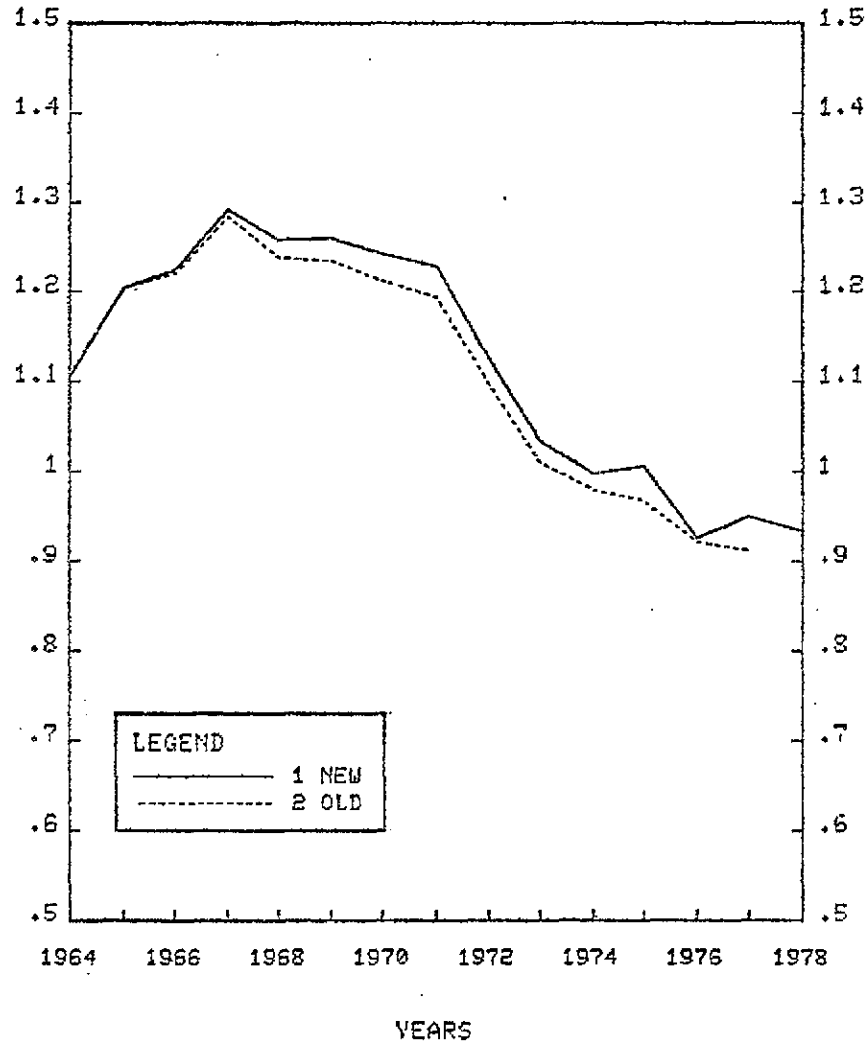
Comparison of Old and Revised GERD Series

Overview

Chart 1 shows the extent of the revision to GERD expressed as a percentage of GNP. As may be seen, the revised GERD estimates in total have raised the ratio of GERD to GNP in the period following 1967, with significant increases in 1975 and 1977. Table 1 shows the data underlying Chart 1.

CHART 1

NATURAL SCIENCE R&D
COMPARISON OF OLD AND NEW GERD ESTIMATES AS A PERCENTAGE OF GNP



SOURCE : OLD: STATISTICS CANADA, ANNUAL REVIEW OF SCIENCE STATISTICS, CAT. NO. 13-212

a . NEW: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

TABLE 1

TOTAL NATURAL SCIENCE R&D
COMPARISON OF OLD AND NEW GERD ESTIMATES

(MILLIONS OF CURRENT DOLLARS)

	GNP	GERD			% OF GNP	
	(\$ BIL)	OLD	NEW	%CHG	OLD	NEW
1963	46.0	466.0	464.9	-0.2	1.01	1.01
1964	50.3	558.1	556.4	-0.3	1.11	1.11
1965	55.4	667.8	667.4	-0.1	1.21	1.20
1966	61.8	754.8	757.4	0.3	1.22	1.23
1967	66.4	852.6	857.9	0.6	1.28	1.29
1968	72.6	899.7	913.7	1.6	1.24	1.26
1969	79.8	985.1	1,006.5	2.2	1.23	1.26
1970	85.7	1,040.2	1,065.8	2.5	1.21	1.24
1971	94.5	1,130.1	1,161.9	2.8	1.20	1.23
1972	105.2	1,153.4	1,184.4	2.7	1.10	1.13
1973	123.6	1,249.4	1,279.6	2.4	1.01	1.04
1974	147.5	1,448.3	1,472.3	1.7	0.98	1.00
1975	165.4	1,603.1	1,666.0	3.9	0.97	1.01
1976	191.5	1,766.3	1,775.5	0.5	0.92	0.93
1977	210.1	1,916.2	2,000.0	4.4	0.91	0.95
1978	232.8	-	2,178.0	-	-	0.94

SOURCE: OLD: STATISTICS CANADA, ANNUAL REVIEW OF SCIENCE STATISTICS CANADA, CAT.
NO. 13-212

(a) NEW: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

R&D by Performer

Chart 2 shows the level of R&D in constant dollars by performer, 1964 to 1978, on a ratio scale to illustrate the real rate of change in the level of performance by sector. As may be seen, the general flat pattern of the early 1970s has continued in the revised series, with some evidence of an industry upturn apparent in the 1977 and 1978 data.

A major change in the new performer series is the addition of the private non-profit sector as a separate performer of R&D. Formerly, this sector was included in the University sector.

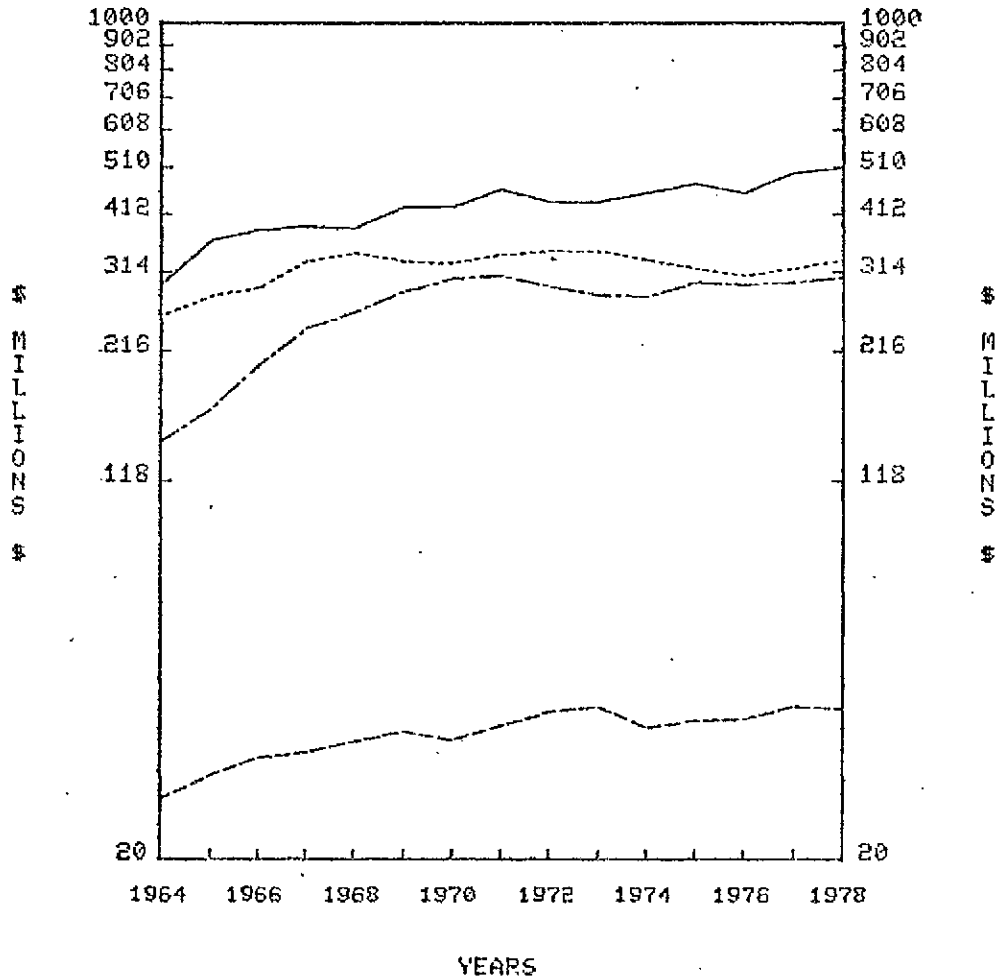
Table 2 compares the new performer data and the previous estimates by sector. As indicated, the only significant change is a sharp increase (about 7 to 8 per cent) in the level of R&D performed by universities and, as well, the addition of the PN-P sector to the performer data base. These increases are due to the adoption of a

"funders approach" to estimating the level of sponsored R&D performed by universities, and some refinement to the previous methodology of estimating non-sponsored university R&D based on estimates of "free-time research factors", the number of full-time university staff in the natural sciences, and a refined estimate of research-relevant operating and capital costs.

It should be noted that the bulk of the revisions to the GERD estimates are attributable to the changes made in the university R&D estimates.

CHART 2

TOTAL R&D BY PERFORMER
CONSTANT 1971 DOLLARS - (SEMI-LOG SCALE)



LEGEND

- 1 INDUSTRY
- 2 FEDERAL GOVERNMENT
- - - 3 UNIVERSITIES
- . - . 4 PROVINCIAL GOV'T

TABLE 2

NATURAL SCIENCE R&D BY PERFORMER
COMPARISON OF OLD AND NEW GERD ESTIMATES

(MILLIONS OF CURRENT DOLLARS)

	GOVERNMENT			INDUSTRY			UNIVERSITIES			PRIVATE NON-PROFIT	
	OLD	NEW	%CHG	OLD	NEW	%CHG	OLD	NEW	%CHG	OLD	NEW
1963	194.1	194.2	0.1	180.4	180.4	0.0	91.5	86.0	-6.0	0.0	4.3
1964	215.9	215.9	0.0	227.0	227.0	0.0	115.2	102.9	-5.5	0.0	4.6
1965	245.2	245.2	0.0	287.4	287.4	0.0	135.2	129.8	-4.0	0.0	5.0
1966	267.7	267.7	0.0	317.1	317.1	0.0	170.0	167.2	-1.6	0.0	5.4
1967	310.4	310.4	0.0	335.5	335.5	0.0	206.7	206.0	-0.3	0.0	6.0
1968	335.4	335.3	-0.0	342.2	342.1	-0.0	222.1	229.8	3.5	0.0	6.5
1969	339.4	339.4	-0.0	394.7	393.8	-0.2	251.0	266.3	6.1	0.0	7.0
1970	352.2	352.1	-0.0	415.9	413.0	-0.7	272.1	293.0	7.7	0.0	7.7
1971	379.6	379.6	0.0	467.5	464.5	-0.6	283.0	309.5	9.4	0.0	8.3
1972	406.7	406.7	0.0	459.5	459.3	-0.0	287.2	309.4	7.7	0.0	9.0
1973	444.3	444.2	-0.0	504.0	502.2	-0.4	301.1	323.4	7.4	0.0	9.8
1974	490.3	489.0	-0.3	610.9	603.5	-1.2	347.1	369.1	6.3	0.0	10.7
1975	509.8	522.2	2.4	692.2	696.5	0.6	401.1	435.7	8.6	0.0	11.6
1976	552.0	557.0	0.9	781.1	729.9	-6.6	433.2	476.0	9.9	0.0	12.6
1977	602.0	617.4	2.6	846.4	854.9	1.0	467.8	514.1	9.9	0.0	13.6
1978	0.0	680.6	0.0	0.0	927.5	0.0	0.0	555.2	0.0	0.0	14.7

SOURCE: OLD: STATISTICS CANADA, ANNUAL REVIEW OF SCIENCE STATISTICS, CAT. NO. 13-212

(a) NEW: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

R&D by Source of Funds

Chart 3 shows the revised source of funds series in constant 1971 dollars plotted on a ratio scale to highlight percentage rates of change. As may be seen, provincial funding for R&D has increased more rapidly than other sources during recent years, but significant increases are also evident for the federal government and industry.

Table 3 compares the new estimates of funders of R&D with the previous series. Substantial revisions, in percentage terms, have been made to the university-funded series (up by some 25 per cent in recent years) and in private non-profit and foreign funding (revised downward by about 15 per cent each in recent years).

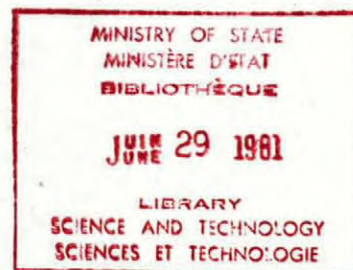
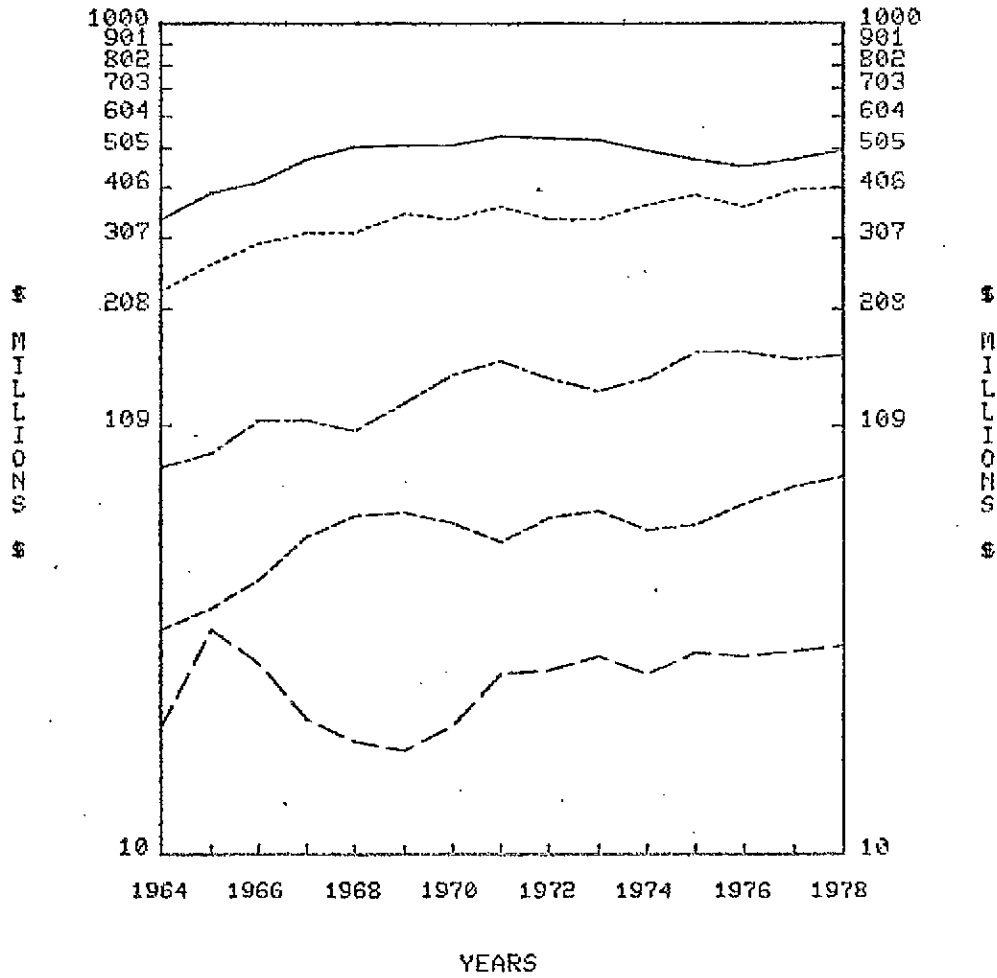


CHART 3
TOTAL R&D BY SOURCE OF FUNDS
CONSTANT 1971 DOLLARS - (SEMI-LOG SCALE)



LEGEND

- 1 FEDERAL GOVERNMENT
- 2 INDUSTRY
- 3 UNIVERSITIES
- 4 PROVINCIAL GOVERNMENT
- 5 FOREIGN

TABLE 3

NATURAL SCIENCE R&D BY SOURCE OF FUNDS
COMPARISON OF OLD AND NEW GERD ESTIMATES

(MILLIONS OF CURRENT DOLLARS)

	GOVERNMENT			INDUSTRY			UNIVERSITY			PRIVATE NON-PROFIT			FOREIGN		
	OLD	NEW	%CHG	OLD	NEW	%CHG	OLD	NEW	%CHG	OLD	NEW	%CHG	OLD	NEW	%CHG
1963	243.6	247.1	1.4	145.3	145.4	0.1	62.4	54.3	-13.0	6.5	8.6	32.3	8.2	9.5	15.9
1964	283.7	289.5	2.0	175.8	175.9	0.1	77.1	66.2	-14.1	7.0	9.1	30.0	14.5	15.7	8.3
1965	335.9	344.8	2.6	211.0	211.1	0.0	85.7	74.3	-13.3	8.1	9.6	18.5	27.1	27.6	1.8
1966	372.6	384.2	3.1	245.7	245.8	0.0	104.1	93.3	-10.4	8.9	10.2	14.6	23.5	23.9	1.7
1967	431.4	458.9	6.4	273.1	273.2	0.0	120.4	96.6	-19.8	9.4	10.9	16.0	18.3	18.3	-
1968	474.0	511.1	7.8	230.5	280.8	0.1	116.7	93.8	-19.6	11.3	11.4	0.9	17.2	16.6	-3.5
1969	499.3	537.7	7.7	325.3	325.0	-0.1	131.9	115.2	-12.7	11.1	12.1	9.0	17.5	16.5	-5.7
1970	524.9	559.4	6.6	334.1	333.2	-0.3	145.8	140.5	-3.6	12.7	12.9	1.6	22.7	19.8	-12.8
1971	572.9	597.9	4.4	366.7	365.6	-0.3	140.1	157.3	12.3	19.6	13.8	-29.6	30.3	27.3	-11.4
1972	606.0	630.6	4.1	353.1	360.3	0.6	136.0	149.5	9.9	20.6	14.6	-29.1	32.7	29.4	-10.1
1973	665.9	685.7	3.0	390.1	391.7	0.4	135.3	152.2	12.5	19.2	15.4	-19.8	38.9	34.6	-11.1
1974	728.8	739.1	1.4	491.1	489.1	-0.4	156.9	187.7	19.6	28.5	20.1	-29.5	43.0	36.3	-15.6
1975	752.6	786.2	3.6	570.1	571.3	0.2	193.1	240.1	24.3	28.7	23.3	-18.8	52.6	45.1	-14.3
1976	851.1	847.5	-0.4	617.2	589.0	-4.6	208.5	264.4	26.8	31.0	26.2	-15.5	58.5	48.4	-17.3
1977	925.4	951.7	2.8	668.2	693.4	3.8	225.2	272.4	21.0	33.5	28.9	-13.7	63.9	53.6	-16.1
1978	-	1,055.3	-	-	740.1	-	-	292.6	-	-	31.5	-	-	58.5	-

SOURCE: OLD: STATISTICS CANADA, ANNUAL REVIEW OF SCIENCE STATISTICS, CAT. NO. 13-212

(a) NEW: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

1978 GERD Matrix

Table 4 shows the 1978 GERD matrix of performers of natural sciences R&D by source of funds. GERD is estimated at \$2,178 million in 1978, an increase of 8.9 per cent over the revised 1977 level of \$2,000 million. The level of GERD in 1978 represents 0.935 per cent of estimated GNP, a decrease from 0.95 per cent in 1977.

For reference purposes, Table A-1 in the Appendix provides a summary of GNE data in current and constant dollars covering the historical period 1963 to 1977 with forecasts from 1978 to 1985.

The forecasts were prepared by Government Branch based on consultations with the Department of Finance. The Appendix also includes revised GERD matrices for the 1963 to 1978 period.

TABLE 4

TOTAL R&D EXPENDITURES IN CANADA
1978

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	606.9	2.2	609.1	115.0	181.0	0.6	905.7
PROVINCIAL GOVERNMENT	-	65.3	65.3	30.0	45.0	9.3	149.6
TOTAL GOVERNMENT	606.9	67.5	674.4	145.0	226.0	9.9	1,055.3
INDUSTRY	-	5.6	5.6	732.5	1.6	0.4	740.1
UNIVERSITIES	-	-	-	-	292.6	-	292.6
PRIVATE NON-PROFIT	-	-	-	-	27.1	4.4	31.5
FOREIGN	-	0.6	0.6	50.0	7.9	-	58.5
TOTAL	606.9	73.7	680.6	927.5	555.2	14.7	2,178.0

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

APPENDICES

Table A-1

GROSS NATIONAL EXPENDITURE - HISTORICAL AND PROJECTION
(1963 TO 1985)

(BILLION DOLLARS)

	CURRENT \$		CONSTANT 1971 \$				CONSTANT 1978 \$	
	GNE	% CHG	GNE	% CHG	IPI (1971=100)	% CHG	GNE	IPI (1978=100)
1963	46.0	-	61.5	-	74.8	-	112.2	41.0
1964	50.3	9.3	65.6	6.7	76.7	2.5	119.8	42.0
1965	55.4	10.1	70.0	6.7	79.1	3.1	127.9	43.3
1966	61.8	11.6	74.8	6.9	82.6	4.4	136.7	45.2
1967	66.4	7.4	77.3	3.3	85.9	4.0	141.3	47.0
1968	72.6	9.3	81.9	6.0	88.6	3.1	149.7	48.5
1969	79.8	9.9	86.2	5.3	92.6	4.5	157.4	50.7
1970	85.7	7.4	88.4	2.6	96.9	4.6	161.4	53.1
1971	94.5	10.3	94.5	6.9	100.0	3.2	172.4	54.8
1972	105.2	11.3	100.2	6.0	105.0	5.0	183.0	57.5
1973	123.6	17.5	107.8	7.6	114.7	9.2	196.8	62.8
1974	147.5	19.3	111.7	3.6	132.1	15.2	204.0	72.3
1975	165.4	12.1	113.1	1.3	146.2	10.7	206.5	80.1
1976	191.5	15.8	119.4	5.6	160.4	9.7	218.1	87.8
1977	210.1	9.7	122.6	2.7	171.4	6.9	223.7	93.9
1978	232.8	10.8	127.5	4.0	182.6	6.5	232.8	100.0
1979	258.5	11.0	132.9	4.2	194.5	6.5	242.7	106.5
1980	286.5	10.8	139.6	5.0	205.2	5.5	254.9	112.4
1981	315.7	10.2	146.5	4.9	215.5	5.0	267.5	118.0
1982	346.6	9.8	153.9	5.1	225.2	4.5	281.1	123.3
1983	376.6	8.7	160.8	4.5	234.2	4.0	293.5	128.3
1984	407.1	8.1	167.2	4.0	243.5	4.0	305.2	133.4
1985	439.7	8.0	173.6	3.8	253.3	4.0	317.0	138.7

SOURCE: STATISTICS CANADA AND DEPARTMENT OF FINANCE, NOVEMBER 1978

Table A-2

TOTAL R&D EXPENDITURES IN CANADA
1963

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	175.3	0.5	175.8	28.9	20.7	0.2	225.6
PROVINCIAL GOVERNMENT	-	17.5	17.5	0.1	1.2	2.7	21.5
TOTAL GOVERNMENT	175.3	18.0	193.3	29.0	21.9	2.9	247.1
INDUSTRY	-	0.7	0.7	144.2	0.4	0.1	145.4
UNIVERSITIES	-	-	-	-	54.3	-	54.3
PRIVATE NON-PROFIT	-	-	-	-	7.9	1.3	8.6
FOREIGN	-	0.2	0.2	7.2	2.1	-	9.5
TOTAL	175.3	18.9	194.2	180.4	86.0	4.3	464.9

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-3

TOTAL R&D EXPENDITURES IN CANADA
1964

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	195.5	0.6	196.1	38.6	27.8	0.2	262.7
PROVINCIAL GOVERNMENT	-	18.9	18.9	0.2	4.8	2.9	26.8
TOTAL GOVERNMENT	195.5	19.5	215.0	38.8	32.6	3.1	289.5
INDUSTRY	-	0.8	0.8	174.6	0.4	0.1	175.9
UNIVERSITIES	-	-	-	-	66.2	-	66.2
PRIVATE NON-PROFIT	-	-	-	-	7.7	1.4	9.1
FOREIGN	-	0.1	0.1	13.5	2.0	-	15.7
TOTAL	195.5	20.4	215.9	227.0	108.9	4.6	556.4

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-4

TOTAL R&D EXPENDITURES IN CANADA
1965

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	221.8	0.8	222.6	51.7	39.1	0.2	313.6
PROVINCIAL GOVERNMENT	-	21.3	21.3	0.3	6.4	3.2	31.2
TOTAL GOVERNMENT	221.8	22.1	243.9	52.0	45.5	3.4	344.8
INDUSTRY	-	1.1	1.1	209.5	0.4	0.1	211.1
UNIVERSITIES	-	-	-	-	74.3	-	74.3
PRIVATE NON-PROFIT	-	-	-	-	8.1	1.5	9.6
FOREIGN	-	0.2	0.2	25.9	1.5	-	27.6
TOTAL	221.8	23.4	245.2	287.4	129.8	5.0	667.4

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-5

TOTAL R&D EXPENDITURES IN CANADA
1966

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	241.2	1.0	242.2	50.7	53.3	0.2	346.4
PROVINCIAL GOVERNMENT	-	23.8	23.8	0.4	10.2	3.4	37.8
TOTAL GOVERNMENT	241.2	24.8	266.0	51.1	63.5	3.6	384.2
INDUSTRY	-	1.5	1.5	243.8	0.4	0.1	245.8
UNIVERSITIES	-	-	-	-	93.3	-	93.3
PRIVATE NON-PROFIT	-	-	-	-	8.5	1.7	10.2
FOREIGN	-	0.2	0.2	22.2	1.5	-	23.9
TOTAL	241.2	26.5	267.7	317.1	167.2	5.4	757.4

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-6

TOTAL R&D EXPENDITURES IN CANADA
1967

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	282.1	1.1	283.2	47.0	78.2	0.2	408.6
PROVINCIAL GOVERNMENT	-	25.5	25.5	0.5	20.5	3.8	50.3
TOTAL GOVERNMENT	282.1	26.6	308.7	47.5	98.7	4.0	453.9
INDUSTRY	-	1.5	1.5	271.2	0.4	0.1	273.2
UNIVERSITIES	-	-	-	-	96.6	-	96.6
PRIVATE NON-PROFIT	-	-	-	-	9.0	1.9	10.9
FOREIGN	-	0.2	0.2	16.8	1.3	-	18.3
TOTAL	282.1	28.3	310.4	335.5	206.0	6.0	857.9

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-7

TOTAL R&D EXPENDITURES IN CANADA
1968

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	304.6	1.2	305.8	47.9	98.9	0.3	452.9
PROVINCIAL GOVERNMENT	-	27.5	27.5	0.6	26.0	4.1	58.2
TOTAL GOVERNMENT	304.6	28.7	333.3	48.5	124.9	4.4	511.1
INDUSTRY	-	1.7	1.7	278.4	0.5	0.2	280.8
UNIVERSITIES	-	-	-	-	93.8	-	93.8
PRIVATE NON-PROFIT	-	-	-	-	9.5	1.9	11.4
FOREIGN	-	0.3	0.3	15.2	1.1	-	16.6
TOTAL	304.6	30.7	335.3	342.1	229.8	6.5	913.7

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-8

TOTAL R&D EXPENDITURES IN CANADA
1969

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	305.7	1.3	307.0	55.3	113.1	0.3	475.7
PROVINCIAL GOVERNMENT	-	30.2	30.2	0.7	26.7	4.4	62.0
TOTAL GOVERNMENT	305.7	31.5	337.2	56.0	139.8	4.7	537.7
INDUSTRY	-	1.9	1.9	322.4	0.5	0.2	325.0
UNIVERSITIES	-	-	-	-	115.2	-	115.2
PRIVATE NON-PROFIT	-	-	-	-	10.0	2.1	12.1
FOREIGN	-	0.3	0.3	15.4	0.8	-	16.5
TOTAL	305.7	33.7	339.4	393.8	266.3	7.0	1,006.5

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-9

TOTAL R&D EXPENDITURES IN CANADA
1970

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	318.1	1.1	319.2	62.4	115.9	0.3	497.8
PROVINCIAL GOVERNMENT	-	31.1	31.1	0.8	24.8	4.9	61.6
TOTAL GOVERNMENT	318.1	32.2	350.3	63.2	140.7	5.2	559.4
INDUSTRY	-	1.6	1.6	330.8	0.6	0.2	333.2
UNIVERSITIES	-	-	-	-	140.5	-	140.5
PRIVATE NON-PROFIT	-	-	-	-	10.6	2.3	12.9
FOREIGN	-	0.2	0.2	19.0	0.6	-	19.8
TOTAL	318.1	34.0	352.1	413.0	293.0	7.7	1,065.8

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-10

TOTAL R&D EXPENDITURES IN CANADA
1971

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	342.2	1.3	343.5	74.8	122.1	0.3	540.7
PROVINCIAL GOVERNMENT	-	33.9	33.9	0.9	17.1	5.3	57.2
TOTAL GOVERNMENT	342.2	35.2	377.4	75.7	139.2	5.6	597.9
INDUSTRY	-	1.9	1.9	362.5	1.0	0.2	365.6
UNIVERSITIES	-	-	-	-	157.3	-	157.3
PRIVATE NON-PROFIT	-	-	-	-	11.3	2.5	13.8
FOREIGN	-	0.3	0.3	26.3	0.7	-	27.3
TOTAL	342.2	37.4	379.6	464.5	309.5	8.3	1,161.9

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-11

TOTAL R&D EXPENDITURES IN CANADA
1972

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	364.8	1.3	366.1	73.5	122.2	0.4	562.2
PROVINCIAL GOVERNMENT	-	38.4	38.4	1.0	23.3	5.7	68.4
TOTAL GOVERNMENT	364.8	39.7	404.5	74.5	145.5	6.1	630.6
INDUSTRY	-	1.9	1.9	357.1	1.1	0.2	360.3
UNIVERSITIES	-	-	-	-	149.5	-	149.5
PRIVATE NON-PROFIT	-	-	-	-	11.9	2.7	14.6
FOREIGN	-	0.3	0.3	27.7	1.4	-	29.4
TOTAL	364.8	41.9	406.7	459.3	309.4	9.0	1,184.4

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-12

TOTAL R&D EXPENDITURES IN CANADA
1973

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	397.1	1.7	398.8	80.6	127.8	0.4	607.6
PROVINCIAL GOVERNMENT	-	42.2	42.2	1.1	28.6	6.2	78.1
TOTAL GOVERNMENT	397.1	43.9	441.0	81.7	156.4	6.6	685.7
INDUSTRY	-	2.9	2.9	387.6	1.0	0.2	391.7
UNIVERSITIES	-	-	-	-	152.2	-	152.2
PRIVATE NON-PROFIT	-	-	-	-	12.4	3.0	15.4
FOREIGN	-	0.3	0.3	32.9	1.4	-	34.6
TOTAL	397.1	47.1	444.2	502.2	323.4	9.8	1,279.6

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-13

TOTAL R&D EXPENDITURES IN CANADA
1974

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	440.0	1.5	441.5	84.2	132.6	0.4	658.7
PROVINCIAL GOVERNMENT	-	43.9	43.9	1.3	28.4	6.8	80.4
TOTAL GOVERNMENT	440.0	45.4	485.4	85.5	161.0	7.2	739.1
INDUSTRY	-	3.3	3.3	484.1	1.4	0.2	489.1
UNIVERSITIES	-	-	-	-	187.7	-	187.7
PRIVATE NON-PROFIT	-	-	-	-	16.9	3.2	20.1
FOREIGN	-	0.3	0.3	33.9	2.1	-	36.3
TOTAL	440.0	49.0	489.0	603.5	369.1	10.7	1,472.3

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-14

TOTAL R&D EXPENDITURES IN CANADA
1975

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	466.4	1.8	468.2	86.0	139.6	0.5	694.3
PROVINCIAL GOVERNMENT	-	49.6	49.6	4.0	30.9	7.4	91.9
TOTAL GOVERNMENT	466.4	51.4	517.8	90.0	170.5	7.9	786.2
INDUSTRY	-	4.2	4.2	565.4	1.4	0.3	571.3
UNIVERSITIES	-	-	-	-	240.1	-	240.1
PRIVATE NON-PROFIT	-	-	-	-	19.9	3.4	23.3
FOREIGN	-	0.2	0.2	41.1	3.8	-	45.1
TOTAL	466.4	55.8	522.2	696.5	435.7	11.6	1,666.0

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-15

TOTAL R&D EXPENDITURES IN CANADA
1976

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	495.0	1.6	496.6	88.9	148.5	0.5	734.5
PROVINCIAL GOVERNMENT	-	54.8	54.8	13.0	37.2	8.0	113.0
TOTAL GOVERNMENT	495.0	56.4	551.4	101.9	185.7	8.5	847.5
INDUSTRY	-	5.2	5.2	582.0	1.5	0.3	589.0
UNIVERSITIES	-	-	-	-	264.4	-	264.4
PRIVATE NON-PROFIT	-	-	-	-	22.4	3.8	26.2
FOREIGN	-	0.4	0.4	46.0	2.0	-	48.4
TOTAL	495.0	62.0	557.0	729.9	476.0	12.6	1,775.5

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-16

TOTAL R&D EXPENDITURES IN CANADA
1977

SOURCE OF FUNDS	PERFORMERS						TOTAL
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	
FEDERAL GOVERNMENT	547.2	1.8	549.0	100.0	168.7	0.5	818.2
PROVINCIAL GOVERNMENT	-	62.0	62.0	22.0	40.9	8.6	133.5
TOTAL GOVERNMENT	547.2	63.8	611.0	122.0	209.6	9.1	951.7
INDUSTRY	-	5.9	5.9	685.6	1.6	0.3	693.4
UNIVERSITIES	-	-	-	-	272.4	-	272.4
PRIVATE NON-PROFIT	-	-	-	-	24.7	4.2	28.9
FOREIGN	-	0.5	0.5	47.3	5.8	-	53.6
TOTAL	547.2	70.2	617.4	854.9	514.1	13.6	2,000.0

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

Table A-17

TOTAL R&D EXPENDITURES IN CANADA
1978

SOURCE OF FUNDS	PERFORMERS						
	FEDERAL GOVERNMENT	PROVINCIAL GOVERNMENT	TOTAL GOVERNMENT	INDUSTRY	UNIVERSITIES	PRIVATE NON-PROFIT	TOTAL
FEDERAL GOVERNMENT	606.9	2.2	609.1	115.0	131.0	0.6	905.7
PROVINCIAL GOVERNMENT	-	65.3	65.3	30.0	45.0	9.3	149.6
TOTAL GOVERNMENT	606.9	67.5	674.4	145.0	226.0	9.9	1,055.3
INDUSTRY	-	5.6	5.6	732.5	1.8	0.4	740.1
UNIVERSITIES	-	-	-	-	292.6	-	292.6
PRIVATE NON-PROFIT	-	-	-	-	27.1	4.4	31.5
FOREIGN	-	0.6	0.6	50.0	7.9	-	58.5
TOTAL	606.9	73.7	680.6	927.5	555.2	14.7	2,178.0

SOURCE: STATISTICS CANADA, SCIENCE STATISTICS CENTRE

