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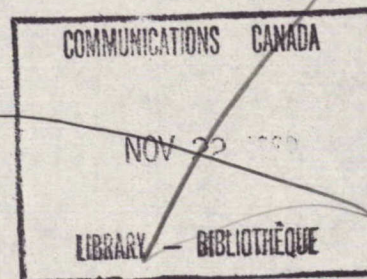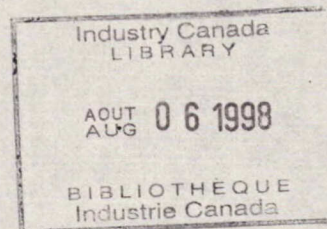
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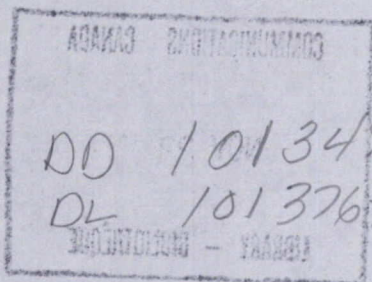
Open Market Data Processing and the
Commercial Service Bureau Industry

Report to the
Économic Aspects Working Group
Interdepartmental Task Force
on Transborder Data Flows

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May, 1983

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Open Market Data Processing and the
Commercial Service Bureau Industry

Abstract

The purpose of this project was to provide, to the extent feasible using existing data, an analysis of the Canadian commercial data processing industry and an assessment of trends in trade flows and the balance of trade in computer services. Intra-corporate service flows, or flows within closed user groups, were excluded from the scope of the project.

The report defines the boundaries of the computer services industry, identifies the service bureau component and studies its structure. Within the limitations of the existing data, a quantitative assessment of the industry is performed in terms of indicators like revenues, growth trends and exports. Balance of trade estimates could not be provided because of the almost total lack of statistics covering service imports. The report also presents the views and concerns expressed by a number of service bureaux and the two major industry associations, the Canadian Association of Data Processing Services Organizations (CADAPSO) and the Canadian Independent Computer Services Association (CICS).

1. Introduction

1.1 Purpose

The objective of this report is to examine transborder data flows (TBDF) as they concern companies which provide computer-based services on a commercial basis. These companies are referred to as computer service bureaux.

This study makes use of briefs provided by the Canadian Association of Data Processing Service Organizations (CADAPSO) and the Canadian Independent Computer Services Association (CICS) and of interviews with selected computer service firms (Appendix I) that were conducted in November and December of 1981. The co-operation and help of these organizations and companies is gratefully acknowledged.

1.2 Scope

The computer service bureau industry is open to more than one definition. We are primarily concerned with the commercial provision of computer-based services, such as local and remote batch data processing and interactive processing, using a combination of computers and telecommunications networks. The 'computer service bureau' is a company that maintains a computer installation and sells the processing services of the installation computer to its clients as a primary or major activity. Most computer service bureaux also provide related services, such as sale or lease of equipment, use of software packages, systems analysis and programming services, and EDP management consulting. The focus of this report is on computer-based services and the extent to which the commercial provision of these services is impacted by transborder data flows.

1.3 Organization

In addition to this introduction, the report contains four other sections and five Appendices. An industry definition and some statistical background information from available Canadian sources is presented in section 2. Section 3 contains a brief analysis of the Canadian service bureau industry, including an examination of its structure, products and markets; some opinions are also presented regarding international trade in computer-based services and the competitiveness of Canadian service bureaux vis-à-vis their U.S, counterparts. Section 4 of the report lists and assesses a number of concerns that were expressed by the two data processing organizations, CADAPSO and CICS, and by the representatives of the companies that were interviewed. Section 5 presents conclusions.

2. Industry Definition and Statistical Background

2.1 Industry Definition

The 'computer service bureau' industry is not a recognized industry from a statistical point of view, as far as Statistics Canada is concerned. Thus this section of the report can only roughly indicate the size of the industry and its recent growth history. It also presents some information on concentration in the industry that was derived from the Statistics Canada computer service industry survey and the annual survey of top computer companies in Canada conducted by Evans Research Corporation.

The primary source of information for this overview is the annual computer service industry census taken by Statistics Canada (Ref. 8). This information has been supplemented by information from selected EDP In Depth Reports published by Evans Research Corporation (Ref. 12). There is no readily available information on the use of service bureaux located outside Canada by Canadian companies and institutions; hence little can be said about imports of computer-based services at the time of writing of this report.

Statistics Canada defines the 'computer service industry' as follows:

For the purposes of the Computer Service Industry survey, establishments classified to the computer service industry include those reporting

° Receipts from sale of computer services greater than one third of operating revenue.

° Receipts from sales and lease or rental of EDP hardware equal to or greater than two-thirds of total operating revenue. The two-thirds criterion was used in order to isolate a more homogeneous group of sales and lease or rental oriented computer service companies.

Computer services include processing services, input preparation, software and systems services, systems development and maintenance, other software and systems services and other computer services (including computer-related education services, computer facility management, feasibility studies, etc.). These services are described further in Appendix IV.

Sales and lease or rental of EDP hardware include sales of computer, peripheral and ancillary equipment and all other computer-related goods purchased for resale, sales of computer-related goods manufactured by own company in Canada, lease or rental of computer, peripheral and ancillary equipment acquired for lease or rental as well as rental of computer-related goods manufactured by own company in Canada. Equipment maintenance services are included here.

2.2 Statistial Background

The computer service bureau industry, which is the focus of this report, is clearly a subset of the 'computer service industry' as defined by Statistics Canada. For 1981, Statistics Canada reported 1392 establishments primarily engaged in providing computer services with total operating revenues of $1,102 million and an additional 28 establishments primarily engaged in sales and lease or rental of EDP hardware with operating revenues of $1,411 million.

The corresponding figures reported in the 1980 survey were 1036 computer service companies with operating revenues of $820 million and 29 equipment sales or leasing companies with operating revenues of $1,111 million. The principal statistics for the period 1972-1981 are given in Table II.5, Appendix II.

A good indicator of computer service bureau activity is revenues attributable to processing. Figure 1 and Table II.6 present revenues from processing for companies in the computer service industry for the period 1974 to 1981. The compound annual growth was close to 24%. It should be noted that these increases in revenues occurred when the price of the service provided was declining; hence the growth in the volume of services provided was even higher.

Processing services revenues were reported (Table II.6) as $433 million in 1980 and $547 million in 1981; revenues from software, systems and consulting services as $258 million in 1980 and $391 million in 1981. According to these figures, processing revenues reported by computer service firms increased by 26.3% from 1980 to 1981, but their share of total operating revenues decreased from 52.8% to 49.6%; software, systems and consulting services revenues increased by 52% from 1980 to 1981, and their share of total operating revenues increased from 31.5% to 35.5%. For the period 1974 to 1981, the compound annual growth rate was about 28% for software and systems services, and around 35% for other professional computer services.

According to Evans Research Corporation (Table II.4, Appendix II), the top 34 computer service bureaux had revenues of some $508 million in 1980 and $610 million in 1981, an increase of 20%; Canadian-owned bureaux dominated the market, accounting for over 80% of these revenues. IBM Canada Ltd.'s service bureau operations, carried out by its datacentres, were the largest by a foreign subsidiary; although company figures are not available, these datacentre revenues are estimated at $34 million in 1980 and $38 million in 1981, ranking sixth in size and accounting for 6.6% of the above total in 1980 and 6.2% in 1981.

Other sources (Tables II.2, II.3, Appendix II) estimate that in 1980, the Canadian computer services industry had revenues exceeding $1 billion; processing services revenues are estimated to have been in the $600-650 million range. The estimates of the projected 5-year compound annual growth rate to 1985 now range from 13% to 16.5% for processing services, and from 17% to 21.5% for total revenues. Due to the current recession, growth in processing services revenues may have slowed to 5-10% in 1982 and could be as low as 10% in 1983.

Figure 2 and Table II.5 show revenues generated outside Canada, by computer service companies using facilities located in Canada. These increased from $10.7 million in 1974 to $48.9 million in 1980 and $58.8 million in 1981; the annual growth rate was 28% (compounded) for the period 1974-81 and 20% for 1980-81. Most of this growth, however, occurred between 1977 and 1981, when these revenues increased from $10.1 million to $58.8 million. Note that the data do not include revenues generated from computers located outside Canada, even though they may be owned by Canadian firms or subsidiaries of Canadian firms.

For 1976, the top 18 firms reporting processing revenues accounted for 63.2% of the processing revenues; in 1979 they accounted for 64.6%. For 1976 the top 3 firms accounted for 26.1%; by 1979 their share had risen to 32%. The three top privately-owned service bureaux, CSG, Datacrown and I.P. Sharp, had

1982 revenues of some $140 million, $88 million and $52 million respectively; these three firms currently account for over 15% of the total computer service industry revenues, and some 44% of the revenues of the top 34 service bureaux. CSG, the largest Canadian service bureau, consolidated its position in 1982 by acquiring Computel Systems Ltd., the fifth largest. I.P. Sharp's foreign revenues, estimated at $35 million for 1982, were greater than the combined foreign revenues of all other Canadian service bureaux.

Figure 1

Composition of Total Operating Revenues for Establishments Primarily Engaged in Providing Computer Services.

COMPOSITION OF TOTAL OPERATING REVENUES

FIGURE 1.

MILLIONS OF DOLLARS

SALE/RENTAL
OF EQUIPMENT

OTHER COMPU-
TER SERVICES

SOFTWARE AND
SYSTEMS SERV

INPUT
PREPARATION

PROCESSING
SERVICES

1200
1100
1000
900
800
700
600
500
400
300
200
100
0

1974 1975 1976 1977 1978 1979 1980 1981
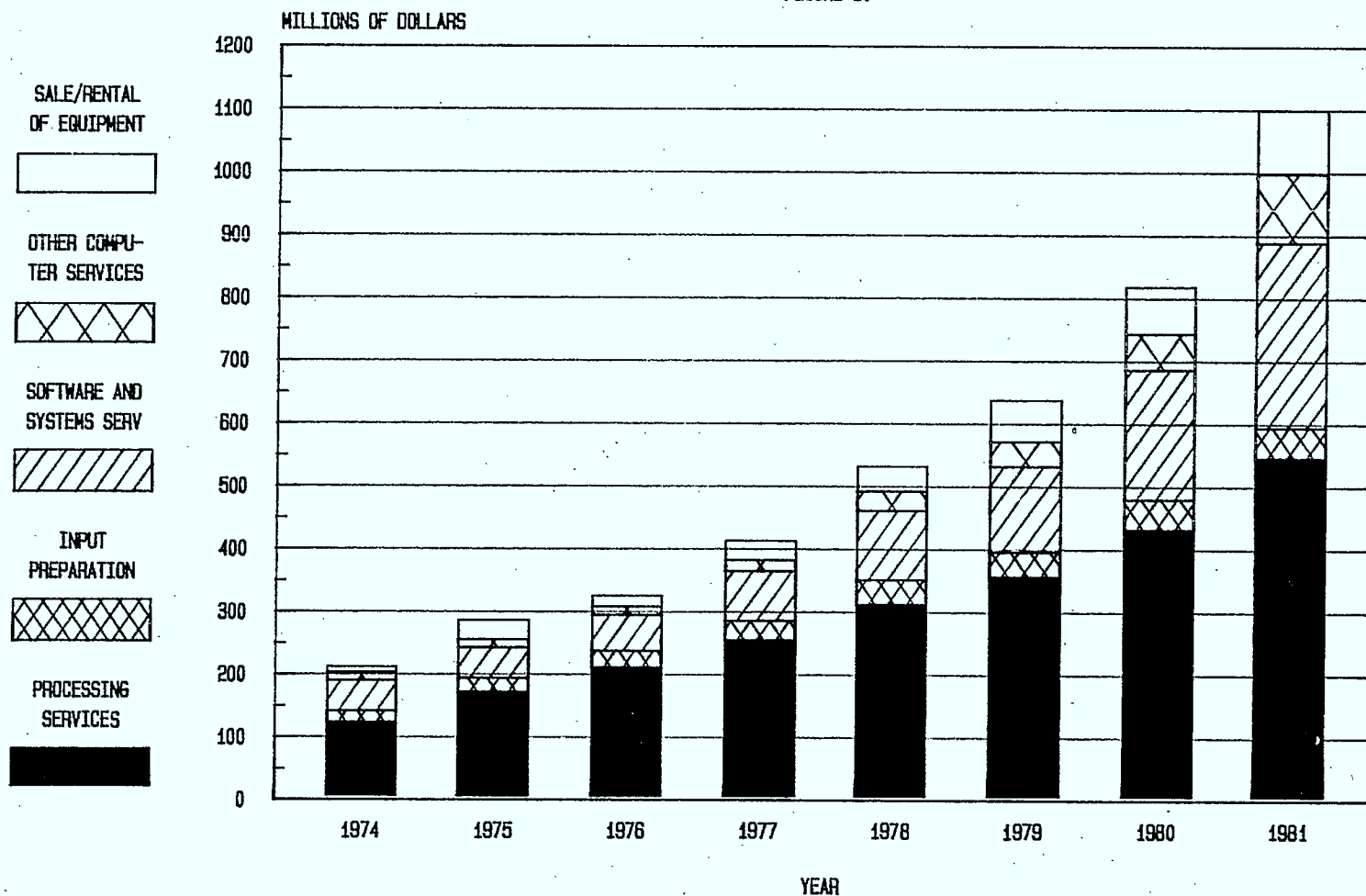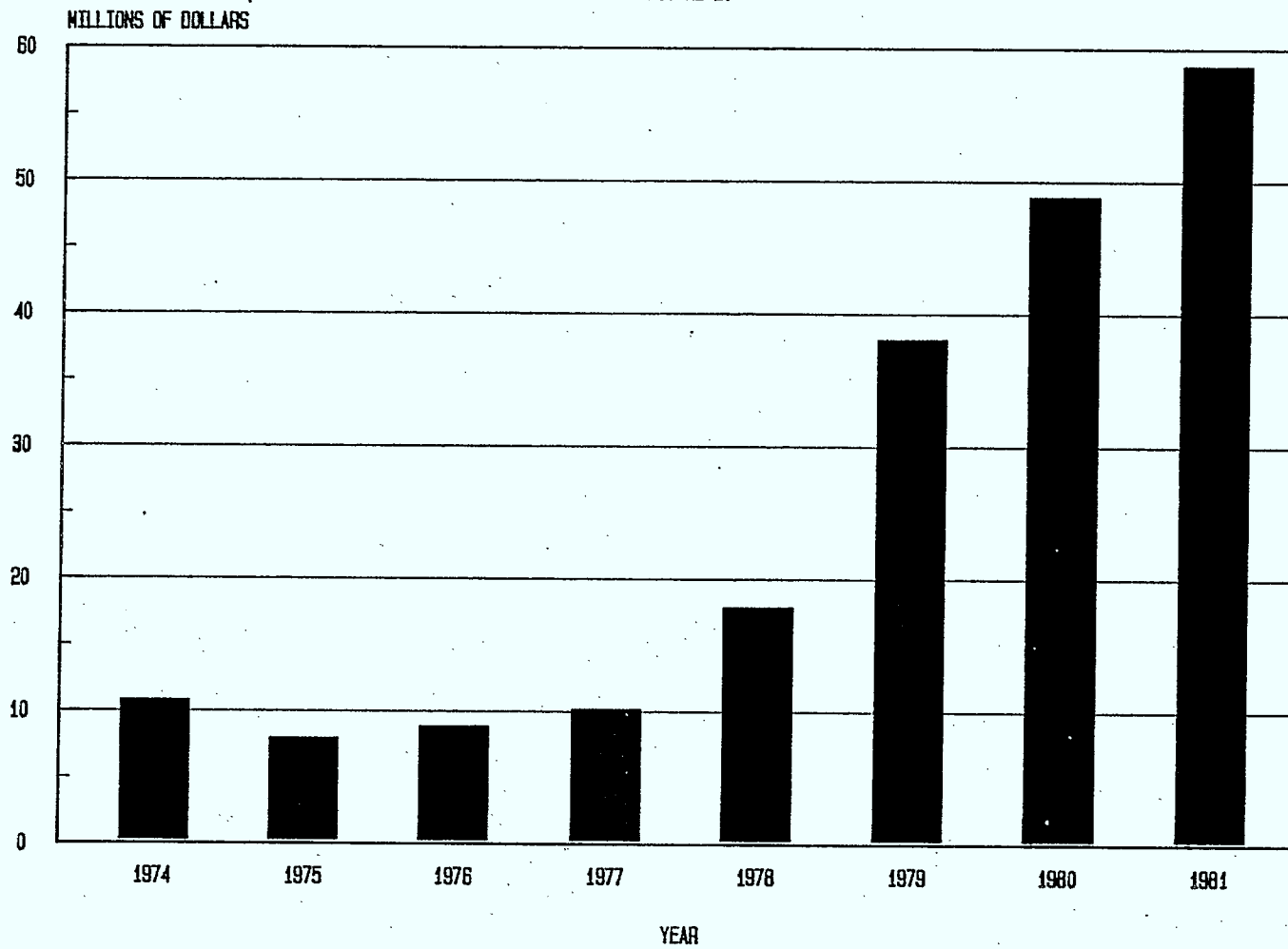
YEAR

Figure 2

Revenues Generated Outside Canada for Establishments Primarily Engaged in Providing Computer Services.

REVENUE GENERATED OUTSIDE CANADA

FIGURE 2.

MILLIONS OF DOLLARS

YEAR

3. Analysis of the Industry

3.1 Product and Market Specialization

An important feature of the computer service bureau industry is the degree of product specialization. Computer service bureaux do not just sell machine cycles; to an ever increasing extent they are trying to sell solutions to problems which involve the use of EDP systems. Thus service bureaux develop expertise in certain specific application areas, provide special software or data bases for use by their clientele, and even develop systems tailored to meet individual client needs. All of the companies interviewed indicated the market segments in which they had specialized. These range from scientific applications, to payroll systems, to management information systems, to airline scheduling systems, to systems and data bases to support economic and market analysis, to the provision of telecommunications network services, to in-house computer replacement, and to banking and financial systems. The market for most of these specialized products is North American if not global.

Markets, however, tend to be localized geographically from a service delivery point of view. For example, Canada has a number of geographically distinct sub-markets such as British Columbia, the Prairie provinces, Southern Ontario, Ottawa, Quebec, the Maritimes. To market services in any of these regions requires a significant presence; at least a sales office with a region specific sales and technical support staff; often the sales office must include communications equipment and high speed printing equipment; penetration into some markets requires the location of a computer installation in the market area. Some service bureaux indicated that at least 25% of the costs associated with the provision of a service in an area will be incurred within that area, even when the computer installation on which the service is based is in a remote region.

3.2 Structure of the Industry

The computer service bureau industry operating in Canada has a distinctly Canadian flavour; it could in no way be described as a branch plant industry. The industry is dominated by Canadian-owned companies whose main operations are Canadian. Firms vary in size from very small companies serving a local market to large organizations serving an international market and having annual revenues exceeding $100 million. Both U.S. computer equipment manufacturers and U.S. computer service bureaux have established Canadian subsidiaries in the service bureau industry; these subsidiaries, in order of importance (Table II.4), are IBM Canada Ltd. (Datacentres Division), Control Data Canada (Cybernet and Business Services), ADP Automatic Data Processing Inc., Canadian General Electric Company (Information Services) and Computer Sciences Canada (Infonet Services). The parent companies of these subsidiaries are, to say the least, very large organizations; in 1982 General Electric Information Services Company (GEISCO) and Control Data had service bureau revenues of some U.S. $680 million and $640 million respectively. However, the Canadian-based companies have been able to compete effectively not only in the Canadian market, but also in the U.S. market in certain special circumstances. The Canadian industry has been able to provide a quality of service which is at least as good as its U.S. counterpart, and in some instances even superior.

Concentration is increasing in the Canadian service bureau industry, and the trend is towards large bureaux capable of serving the national or even North American market. A large number of medium and small-sized firms continue to remain in existence, however, providing specialized services or serving geographical niches. It would appear that these smaller companies can compete effectively with large ones in chosen areas, because of the degree of product specialization.

3.3 International Trade in Computer-Based Services

At the present time, there may be a small trade surplus for Canada in commercial computer-based services. However, the current amount of trade is small compared to total industry activity. The Statistics Canada computer service industry census shows that exports of services from firms located in Canada increased from $10.7 million in 1974 to $58.8 million in 1981; for 1979-81 these exports have formed a fairly stable 5-6% of total operating revenues. There are no available statistics on imports; however, for 1981 industry spokesmen 'guessed' them to be roughly $30 million or 5% of the Canadian market for processing services. For software services and products, not even "guesstimates" are available.

Because of increasing product specialization, some Canadian service bureaux are expanding into U.S. markets. As sales in U.S. markets develop, these Canadian companies may tend to invest in computer facilities located in these U.S. market areas. Thus, if anything, exports of computer services from facilities located in Canada may diminish. There is some possibility, for reasons outlined below, that U.S.-based companies may increase their marketing efforts in Canada.

3.4 Competitiveness of Companies Operating in Canada

The most serious competition for the Canadian computer service bureaux comes from the use of in-house facilities. A number of technological and economic factors are at work here, and some observers think that today's technology is working against the shared hardware principle that has driven the service bureau industry since its inception. Computer equipment costs are declining faster than telecommunications costs. The advent of distributed processing, powerful but cheap micro-computers, relatively easy-to-use super minicomputers and the vastly improved price/ performance of small mainframes of the IBM 43XX series make it attractive for companies to use in-house facilities. On the other hand, computer service bureaux achieve economies of scale in equipment utilization, but more importantly in skilled manpower utilization. They can also offer the use of national, or even international data communications networks, large libraries of applications packages and public online databases at marginal cost.

Regarding competitiveness with U.S.-based computer service bureaux, the Canadian computer service bureaux are at a disadvantage with respect to both equipment and telecommunications costs. Virtually all mainframe data processing equipment used in Canada is imported. It is then subject to import duty and federal sales tax. Thus there is a 15% to 20% equipment cost differential between Canada and the United States. As equipment costs constitute roughly 25%

of the cost of providing computer-based services, Canadian companies suffer a
4 or 5% cost disadvantage relative to companies operating in the U.S. This
margin, although small, could represent the difference between a profit or loss
situation in many cases, especially during the early phase of a firm's
operation.

Data communications costs are generally higher in Canada than in the U.S.,
particularly for long-haul transmission. Needless to say, companies operating
on both sides of the border face these costs equally. However, one anomaly does
result because Canadian regulation prohibits two border crossings to provide
communications between two points located in Canada: services can be provided
more cheaply to Western Canada from a computer centre located on the U.S.
eastern seaboard than from a computer centre located in Toronto.

4. Industry Views and Concerns

The project team did not attempt to sample the views or concerns of users of commercial data processing services. Past experience suggests that at this time most users would strongly favour retaining their present absolute freedom of access to whatever computing services and equipment they considered as best meeting their needs, would object to what are regarded as restrictive and cost-raising telecommunications practices and regulations, and would show little awareness of TBDF and its implications. The one group of users who might react otherwise (if free to express opinions) could be the EDP managers of Canadian subsidiaries of U.S. multinational enterprises (MNEs); however, the views and concerns of MNE users are outside the scope of this report, since the matter is covered in the MNE project report.

Data processing service firms have clearly become much more aware of possible threats to their future related to TBDF than was the case only a few years ago. Briefs were received from both CADAPSO (Ref. 23) and CICS (Ref. 24) containing numerous suggestions for the protection, stimulation or subsidization of their member firms, and the ten firms interviewed individually also offered suggestions. These are briefly summarized in the next two sections.

4.1 Concerns Expressed by Firms Interviewed

During the course of the interviews with selected service bureaux (Appendix I), the representatives of the companies were asked to express their concerns or raise whatever issues they wished. What follows is a list of the concerns that were raised by one or more of the companies. Needless to say, they need not be consistent with one another.

a) concern that regulation or taxation of TBDF would make exploitation of the North American market impossible.

b) concern that U.S.-based companies have a competitive advantage in Canadian markets and that they will be successful in penetrating these markets.

c) concern that banks or telecommunications companies which are subject to special regulation may be permitted to enter the computer service bureau business and compete unfairly, because they have a protected revenue base and/or access to capital and clients.

d) concern that the federal (and some provincial) government's reliance on in-house computer facilities leads to unnecessarily high EDP costs to government.

e) concern that certain provincial government agencies, which have an exclusive mandate to provide EDP services to their governments, will be or are encouraged to compete for non-government business.

f) concern that Canadian universities are not sufficiently responsive to the needs for enhanced EDP skills in most disciplines and for cooperative programs with industry.

g) concern that the various national posts and telegraphs administrations (PTTs) outside North America will discourage private telecommunication networks based on leased lines, with the possible result that these markets will be eventually closed to Canadian (and American) service bureaux.

h) concern that Teleglobe, which has been given an exclusive mandate with respect to trans-oceanic telecommunication, prices substantially above cost.

i) concern that capital is not adequately available to small business in Canada.

4.2 Industry Briefs

The five recommendations made in the CICS brief and the fifteen recommendations made in the CADAPSO brief are listed in Appendix V. Both briefs present considerable supporting argumentation for their recommendations, but almost no new factual evidence.

The CICS brief states that Transborder Data Flows in the conventional sense, i.e. one-way flow of information across international boundaries, is a non-issue. It is concerned with Transborder Data Processing (TBDP), which it defines as sending data across borders, having it received by a computer, changed or processed and then sent back in its new form. The central premise of the brief is that the potential costs to Canada from TBDP far outweigh any potential benefits. The economic costs are seen in terms of loss of computer-related and head office jobs, loss of critical EDP skills and the loss of revenues, domestic markets and export potentials. The benefits, in terms of improved access to the vastly larger U.S. market, are considered as unimpressive; the brief claims that every Canadian data processing company that has tried to expand into the U.S. market in the past has been unsuccessful.

Based on the above premises, the CICS brief advocates restrictions on the processing of Canadian data abroad and the ownership of data processing firms; these are combined with recommendations for stimulative measures, in the form of tax write-offs, for encouraging the development of software packages in Canada. The threat of U.S. retaliation in the form of reciprocal restrictions is discounted; the argument being that since the U.S. expects to gain from open borders, it must maintain them open as a matter of firm principle, and cannot set the example of closing its borders against Canadian data and the Canadian data processing industry. CICS argues that if TBDF is small and unimportant, hardly anybody will be bothered by regulations; but if TBDF is big and important, as CICS believes it is, then the regulations will provoke a huge outcry. The outcry will demonstrate how badly the regulations are needed!

The CADAPSO brief draws a distinction between data, the raw material, and information, the finished good produced by processing the data into meaningful conclusions and formatting into output amenable to human comprehension. It, too, claims that Transborder Data Flow is a misnomer and focusses attention on Trans-National Computer Processing (TNCP). The brief addresses the problems and opportunities presented by TNCP for Canada and the Canadian computer service industry.

CADAPSO concludes that there are a number of issues in TNCP which need immediate attention, particularly those relating to privacy, sovereignty and international activities. Technical restriction of TNCP, the economic aspects, foreign exchange considerations, import of hardware and export of services are all concerns which need further deliberations based on badly needed new data. CADAPSO members generally believe that properly managing TNCP could have far reaching benefits to the Canadian economy and to the businesses of CADAPSO members. However, care must be taken to avoid damaging fledgling activities and desirable export opportunities. Having regard to the extremely rapid development of the technological aspects of computers and their use, any rules, regulations and laws created now may well be outdated or physically unenforceable within a very few years. A flexible approach must, therefore, be considered and regular reviews must also be instituted to monitor the situation as it develops during the 1980s.

4.3 Assessment of Issues and Concerns

The views and concerns expressed by the computer service firms interviewed, as well as in the CADAPSO and CICS briefs, can be classified into the following categories: protection, stimulation, subsidization and miscellaneous. They are summarized below, as follows:

Protection

1. Restrict the processing of all or some Canadian data outside Canada by various means.
2. Develop "anti-dumping" laws to prevent foreign bureaus selling in Canada below home market prices.
3. Restrict ownership of Canadian data processing service firms to Canadians.
4. More knowledgeable FIRA reviews of foreign computer services firms attempting to move into Canada in any way.
5. Restrictions on entry of banks, telecommunications companies and government organizations into data processing service markets.

Stimulation

6. Reduce equipment cost by removing duties and sales taxes.
7. Reduce data communications costs, both domestic and overseas.
8. Treat software development costs as research costs (150% write-off).
9. Protect software (and data bases) against unauthorized copying.
10. Increase the supply of trained data processing staff in Canada.
11. Improve the availability of capital to data processing enterprises.
12. Support Canadian firms exporting computer services.

Subsidization

13. Phase out government in-house data processing and contract to Canadian industry.

Miscellaneous

14. Survey the data processing practices of foreign-owned firms in Canada.
15. Require that copies of all important Canadian data and information be retained in Canada.
16. Study the link between EDP location and management jobs.
17. Improve federal contracting-out practices.
18. Maintain the option of leased line telecommunications networks, both nationally and internationally.
19. Maintain access to the North American and world markets for Canadian firms.

These suggestions are not all mutually consistent, since they were offered by different sources. In particular, the first four suggestions for market protection seem incompatible with the suggestions for maintaining access to world markets and for support of export efforts by Canadian data processors. It is noteworthy that the principal protective and stimulative suggestions of the CADAPSO and CICS briefs are quite similar, much more so than could have been expected from earlier statements by these organizations.

It is unlikely that a country the size of Canada could become a world leader in all aspects of computer use or computing services. If the Canadian government wishes to promote the development of commercial data processing service activities in Canada, it may have to select carefully those policies which will promote the areas of greatest opportunity and in which Canadian firms have shown the greatest relative success. Policies of overall protection might blunt the competitive edge of Canadian firms, and would almost certainly stimulate objections and resentment among Canadian users of their services.

Canadian firms certainly have better prospects for growth in computer processing and consulting, and perhaps education, than in input preparation. The latter has a certain degree of natural protection in that users with overload demands will frequently prefer a nearby source to a distant source, regardless of price. And, for many users, the full cost of using a distant low price source of data conversion would exceed the full cost of using a local higher price source.

It has been predicted for fifteen years that the future of computer processing services lies in specialization. It has been argued for just as long that the Canadian market does not provide an adequate base for specialized services, and that it is therefore doomed to be taken over by United States firms. In spite of these precdictions and arguments, the largest Canadian computer processing firms are, with one exception (I.P. Sharp Associates), much less specialized than many smaller firms. Also, a number of small and medium sized Canadian firms appear to have been quite successful in developing high quality specialized processing services and show quite respectable growth in spite of being open to competition from all available sources.

At present, however, our factual knowledge of many aspects of data processing markets and activities in Canada is very poor. Statistics Canada has collected no information on the overall cost structure of the computer service industry since 1977, and has never published information on the differing cost

structures of firms engaged in different types of service activity. There has been no information on user cost structures since the DATACOM '76 survey, and that sample was hardly representative. There is no accurate information on the extent of computer use in Canada, the extent of either commercial or parent-subsidiary imports, the total Canadian requirement for computer services or the share of that total provided by service firms. Policy formulation can hardly wait for these many gaps to be filled, but better information will certainly be required to monitor policy success and to permit its timely adaptation to rapidly changing circumstances as computer/communications and its uses progress and alter.

Even without better overall information, certain changes in present policies and regulations would clearly benefit the data processing service industry. The elimination of any taxes and administrative practices which raise the costs of computing equipment above U.S. levels would be especially beneficial since it would directly affect the profitability of Canadian service firms (now far below the U.S. level). Profitability is essential to long-run survival and growth. However, it might well be unwise to attempt to confine such cost-reducing relief to computer service firms; the general application of such relief would improve the competitiveness of all Canadian computer users, and would remove one genuine factor which underlies at least some of the migration of Canadian computing to the United States.

Higher Canadian data communications costs, and the regulations intended to protect Canadian carriers against U.S. competition, also appear to require attention. Data communications is a growing component of computing service costs, and high costs in this area again bear directly on the profitability of Canadian firms. The present Canadian regulations, which prohibit two border crossings on any single transmission have the result that the data communications costs to serve a Vancouver customer are lower for a Boston or Atlanta service center than for one located in central Canada. There is need for a through review of the pricing of data communications in Canada, and between Canada and overseas markets.

Another area in which action may be critical is in improving the computer literacy of Canadians in general, and in particular of increasing the opportunities for post-secondary study directed towards systems and programming careers. Some technical institutes and universities have already achieved excellent reputations in this field; if the number of students in those institutions and courses could be increased by a special infusion of funds it might provide an incentive for others to place more stress on such training. In addition, re-training courses (which may become more critical as the application of informatics progresses) should make every effort to accomodate all who have the aptitude and can be steered in this direction. Skilled human resources have always been the key to effective computer use, but they are becoming steadily more important as their share of computer/communications costs increases.

5. Conclusions

The Canadian computer service bureau industry is now a mature Canadian industry. However, there is a possibility that U.S.-based companies will be successful in increasing their penetration of the Canadian market.

Two types of responses are possible and both were advocated. The first is to protect the Canadian market by controlling or taxing trans-border data flows, as well as restricting ownership and establishment rights for non-Canadian firms. The second is to take whatever measures are necessary to ensure that Canadian companies can compete with U.S. companies, in both the Canadian and U.S. markets. The second approach is to be preferred for the following reasons: protection inevitably leads to inefficiency, and the Canadian market is not large enough to support the development of specialized products. If the aim is to develop North American or world class computer service bureaux in Canada, this can only be done with the second approach.

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Published by Computing Publications Ltd., England, 1982.

D.   Industry Briefs and Submissions to the Task Force

22.   Brief submitted by the Canadian Independent Computer Services
      Association (CICS), November 1981.

23.   Brief submitted by the Canadian Association of Data Processing
      Services Organizations (CADAPSO), November 1981.

24.   Brief submitted by the Canadian Business Equipment Mnaufacturers
      Association (CBEMA), April 1982.

25.   Brief submitted by I.P. Sharp Associates Ltd., June 1982.

Appendix I

Companies Interviewed

Table I.1

List of Computer Service Bureaus and Related Firms Interviewed

Service Bureau				
Name of Firm	HQ Location	Interview Dates	Assoc. Member	Remarks
1. I.P. Sharp Associates Ltd.	Toronto	28.9.81, 11.11.81	CATA	International time-sharing service bureau; largest APL vendor; major database vendor.
2. Computer Sciences Canada Ltd.	Toronto	29.9.81, 2.12.81	–	Interviewed both HQ and Western District (Calgary) for IFONET operations.
3. MPS Consultants/ Apex Computing Inc.	Toronto	29.9.81, 10.11.81	–	Small service bureau, plus software packages.
4. Datacrown Inc.	Toronto	30.9.81	CADAPSO	Second largest Canadian Service Bureau, plus diversified services.
5. Canada Systems Group	Mississauga	20.10.81	CADAPSO	Largest Canadian Service Bureau, plus diversified services.
6. Comcheq Services Inc.	Winnipeg	1.12.81	CICS	Small firm specializing in payroll services.
7. Digitech Ltd.	Calgary	2.12.81	–	Specializing in analysis of geo-physical/seismic data; energy exploration support.
8. National Data-centre Corp.	Vancouver	3.12.81	CADAPSO	Financial packages, cablevision, insurance.
9. Datatech Systems Ltd.	Victoria	4.12.81	CICS	One of Western Canada's largest DP companies.
10. B.C. Systems Corporation	Victoria	4.12.81	CADAPSO	Crown corporation set up to serve B.C. provincial govt. and non-private institutions; third largest service bureau in Canada.

Appendix II

Statistical Tables

Table II.1

Estimates of Canadian Computer Population and
Annual Rental Value ($m) of Installed Computers, 1970-1990

Item	Category	Years				
		1970	1975	1980	1985	1990
	Total (Rounded)	4,400	14,600	81,000	285,000	752,000
1. Computer Population	Large (1)	91	244	433	553	641
	Medium (1)	1,330	1,779	3,191	4,073	4,722
	Small (1)	1,701	6,077	17,605	35,410	57,028
	Very Small	1,300	6,300	18,700	44,600	89,700
	Desktop	–	200	41,000	200,000	600,000
2. Annual Rental Value of Installed Computers ($m)	Total	396	796	1,717	2,873	4,375
	Large	77	236	498	755	1,040
	Medium	251	344	589	733	850
	Small	57	178	491	974	1,568
	Very Small	11	37	90	201	377
	Desktop	–	1	49	210	540
3. Percentage of Total Annual Rental Value (%)	Total	100.0	100.0	100.0	100.0	100.0
	Large	19.6	29.6	29.0	26.3	23.8
	Medium	63.3	43.3	34.3	25.5	19.4
	Small	14.3	22.3	28.6	33.9	35.8
	Very Small	2.8	4.7	5.2	7.0	8.6
	Desktop	–	0.1	2.9	7.3	12.4

Sources: ° CIPS Annual Computer Census, 1965-80
          ° Revised DOC estimates, February 1982
          ° Report on Software Related Issues

Notes: (1) CIPS Census Sizes include Large, Medium and Small (Monthly Rental
             of $1000 and over).

Table II.2

Preliminary Estimates for Canadian User Costs and
Computer Services Industry Revenues, 1970-1990
(Millions of Current Dollars)

Item	Category	Cost/Revenues ($m)				
		1970	1975	1980	1985	1990
1. User Costs for C/C Services	Total	1,185	2,660	6,090	11,810	19,560
	In-house	985	2,170	4,615	8,095	12,405
2. Software Costs (User and Service Suppliers)	Development		440	880	1,605	2,640
	Maintenance		480	1,120	2,010	3,220
	Other Software (Packages, etc.)		15	40	80	120
3. Computer Services Industry Revenues	Total	150	400	1,030	2,260	4,165
	Machine-Based(1)		305	655	1,205	1,940
	Person-Based(2)		95	375	1,055	2,225

Sources: ° The Growth of Computer/Communications in Canada, March 1978 and
             Revised DOC estimates, February 1982.
          ° Report on Software Related Issues
          ° Statistics Canada Catalogue 63/222: Computer Services Industry
             (1972-80)

Notes: (1) Machine-based includes revenues from data processing, input
             preparation and the computer usage component of software development
             and information retrieval services.
        (2) Person-based includes all costs of programmers, systems analysts,
             consultants, etc for other services.

Table II.3

Computer/Communications Services Markets and Estimated Revenues for U.S. and
Canadian Suppliers

| Expenditures/ Revenues | United States | | | Canada | | |
| Item | (U.S. $ billions) | | | (Cdn. $ billions) | | |
	1975 (est.)	1980 (est.)	1985 (proj.)	1975 (est.)	1980 (est.)	1985 (proj.)
Computer/ Communications User Expenditures	28	55	120	2.7	6.1	11.8
Computer Services Industry (total)	6.0	13-15.0	34-35.0	0.4	1.0-1.1	2.3-3.1
Processing Services	3.0	6.9-8.8	15-18.8	0.30	0.6-0.7	1.2-1.4

Sources: Computer/Communications Secretariat, Department of Communications,
Ottawa, "The Growth of Computer/Communications in Canada";
Evans Research Corporation, Toronto, "The Canadian Computer Industry"
and Various EDP In-Depth Reports;
International Data Corporation: Computer Industry Review and Forecast
1976-85, and subsequent EDP Industry Reports;
ADAPSO/Input Ltd.: 1980 Computer Services Industry Survey.

Table II.4

Revenues of the Top Service Bureaus in Canada
(millions of Canadian dollars)

Company Name	Fiscal Year end	Owner-ship	EDP Service Revenues (1)			% of Sample Total		% Annual Growth		Source Code (2)
			1981	1980	1979	1981	1980	81/80	80/79	
1. Canada Systems Group Ltd.	Dec. 31	Can.	101.5	77.9	62.3	16.7	15.3	30	25	A
2. Datacrown Inc.	Dec. 31	Can.	86.2	68.6	60.2	14.1	13.5	26	14	A
3. B.C. Systems Corp.	Mar. 31	Can	57.9	49.1	40.2	9.5	9.7	18	22	A
4. I.P. Sharp Associates Ltd.	Dec. 31	Can.	42.0	35.3	24.7	6.9	7.0	19	43	B
5. Computel Systems Ltd. (4)	Dec. 31	Can.	41.3	38.4	31.0	6.8	7.6	8	24	A
6. IBM Canada Ltd. (3)	Dec. 31	U.S.	37.7	33.6	30.0	6.2	6.6	12	12	C
7. L'Industrielle Services Techniques Inc. (IST)	Dec. 31	Can.	23.8	20.4	19.5	3.9	4.0	17	5	B
8. Control Data Canada (Cybernet Services) (3)	Nov. 30	U.S.	20.3	14.5	–	3.4	2.9	40	–	B
9. ADP Automatic Data Processing Inc.	June 25	U.S.	20.0	16.7	12.0	3.3	3.3	20	39	C
10. Sask Comp	Dec. 31	Can.	16.8	12.8	9.9	2.8	2.5	31	29	A
			(447.5)	(367.3)		(73.4)	(72.3)	(21.8)		
11. Manitoba Data Services	Mar. 31	Can.	15.5	13.0	11.5	2.5	2.5	19	13	C
12. Canadian General Electric Co. Ltd. (Info. Services) (3)	Dec. 31	U.S.	15.0	14.0	–	2.5	2.8	7	–	C
13. Computer Sciences Canada Ltd.	Mar. 31	U.S.	12.2	11.2	9.3	2.0	2.2	9	20	B
14. Comshare Ltd.	Dec. 31	Can.	10.2	7.6	6.5	1.7	1.5	34	17	B
15. Dataline Inc.	Dec. 31	Can.	9.9	8.2	7.0	1.6	1.6	21	17	A
16. Digitech Ltd. (3)	June 30	Can.	9.0	7.9	7.8	1.5	1.6	14	1	A
17. Nfld. & Labrador Computer Services Ltd.	Mar. 31	Can.	8.4	7.3	6.2	1.4	1.4	15	18	B
18. ACT Computer Services Ltd.	Dec. 31	U.S.	7.5	6.8	4.9	1.2	1.3	10	39	B
19. NCR Canada Ltd. (3)	Nov. 30	U.S.	7.0	7.0	–	1.1	1.4	0	–	C
20. Real Time Datapro Ltd.	Feb. 28	Can.	6.4	5.1	4.3	1.1	1.0	25	19	A
			(548.6)	(455.4)		(90.0)	(89.7)			
			(101.1)	(88.1)				(14.8)		

Table II.4 (Continued)

Revenues of the Top Service Bureaus in Canada
(millions of Canadian dollars)

Company Name	Fiscal Year end	Owner-ship	EDP Service Revenues (1)			% of Sample Total		% Annual Growth		Source Code (2)
			1981	1980	1979	1981	1980	81/80	80/79	
21. National Datacentres Corp.	Mar. 31	Can.	6.3	5.2	4.7	1.0	1.0	21	11	C
22. Comtech Group Intl. Ltd.	June 30	Can.	5.8	5.7	5.7	1.0	1.1	2	ʼ 0	A
23. Riley's Datashare Intl. Ltd.	May 31	Can.	5.6	5.1	4.2	0.9	1.0	10	21	A
24. Alphatext (1981) Ltd. .	Dec. 31	Can.	4.9	4.7	5.2	0.8	1.9	4	(10)	B
25. Comcheq Services Ltd.	May 31	Can.	4.8	3.6	2.2	0.8	0.7	33	64	B
26. Cybershare Ltd.	Mar. 31	Can.	4.6	4.3	2.0	0.8	0.8	7	115	B
27. Polycom Systems Ltd.	Sep. 30	Can.	4.5	3.3	2.8	0.7	0.6	36	18	.A
28. Boeing Computer Services Canada Ltd.	Dec. 31	U.S.	4.2	4.2	3.6	0.7	0.8	0	17	C
29. Coverall Computer Services Ltd.	May 31	Can.	4.2	2.6	1.5	0.7	0.5	62	73	B
30. MICR Systems Ltd.	Dec. 31	Can.	4.2	4.2	4.0	0.7	0.8	0	5	C
31. Automation Centres of Ottawa Ltd.	Dec. 31	Can.	4.0	3.0	3.7	0.7	0.6	33	(19)	
32. Computrex Centres Ltd.	Mar. 31	Can.	3.5	3.8	3.4	0.6	0.7	(8)	12	B
33. Cableshare Inc.			2.4	1.5	–	0.4	0.3	60	–	A
34. University Computing Co. Canada Ltd.	Dec. 31	U.S.	1.9	1.3	1.8	0.3	0.3	46	(27)	B
			(60.9)	(52.5)				(16)		
TOTAL			609.5	507.9		100	100	20		

Notes: (1) Include domestic and export revenues.
         (2) Source Code: A = Published by Company;
                           B = Confirmed by Company Official;
                           C = Estimated by Evans Research Corporation

         (3) Estimated Revenues from Service Bureau operations.
         (4) Acquired by CSG in 1982.

Table II.6: Sources of Operating Revenue for Establishments Primarily Engaged in Providing Computer Services, 1972-81

Item		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Annual Growth (%) 80/81	CAG 74-81
1. Total Operating Revenues	$m			210.9	285.7	327.5	416.0	531.8	638.0	814.8	1,102	34.4	26.6
	%			100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		
2. Processing Services													
- OTC Batch	$m			80.6	92.7	79.3	114.6	-	-	-	-		
- RJE Batch	$m			43.7	52.0	61.6	76.3	-	-	-	-		
- Online Interactive	$m				23.0	40.7	55.6	-	-	-	-		
- Other					5.3	9.8	8.2						
Sub-Total	$m			124.3	173.0	211.5	255.3	313.8	357.0	433.3	547.3	26.3	23.6
	%			(58.4)	(60.5)	(64.5)	(61.4)	(59.0)	(55.9)	(52.8)	(49.6)		
3. Input Preparation	$m			15.8	19.3	25.6	32.4	36.8	39.9	44.8	48.3	7.8	17.3
	%			(7.5)	(6.8)	(7.8)	(7.8)	(6.9)	(6.9)	(5.5)	(4.4)		
4. Software and Systems Services													
- Software Packages (Rental, royalties and sale)	$m			24.7"	12.7	11.2	12.2	20.9	24.8	42.2	86.5	105.	
	%			(10.7)	(4.5)	(3.5)	(2.9)	(3.9)	(3.9)	(5.1)	(7.8)		
- Systems Development and Maintenance	$m			25.9"	37.4	43.4	60.7	75.2	99.2	150.1	196.9	31.2	
	%			(12.3)	(13.0)	(13.2)	(14.6)	(14.2)	(15.5)	(18.3)	(17.9)		
- Other Software and Systems Services (exc. Consulting)	$m			-	1.9	5.0	4.4	16.0	11.9	15.6	7.7		
	%				(0.7)	(1.5)	(1.1)	(3.0)	(1.9)	(1.9)	(0.7)		
Sub-Total	$m			50.6	52.0	59.6	77.4	112.2	135.8	207.9	291.1	40.0	28.4
	%			(24.0)	(18.2)	(18.2)	(18.6)	(21.1)	(21.3)	(25.4)	(26.4)		
5. Other Computer Services (education, consulting, etc)[1]	$m			12.8*	5.3	10.6	19.6	28.5	37.2	49.8	100.4	102.	
	%			(6.1)	(1.9)	(3.2)	(4.7)	(5.4)	(5.8)	(6.1)	(9.1)		
7. Sale/Rental of EDP equipment	$m			6.7	23.3"	12.4"	21.2"	31.3	40.5	62.3	86.9	39.5	
	%			(3.2)	(8.2)	(3.8)	(5.1)	(5.9)	(7.9)	(7.6)	(7.9)		
6. Equipment Maintenance Services[2]	$m			-	6.4	0.6	X	-	4.4	7.0	13.2	88.6	
	%				(2.2)	(10.2)			(0.7)	(0.8)	(1.2)		

Appendix III

A Note on Data Sources and Information Gaps

A detailed discussion of data sources and information gaps is contained in the background paper titled "An Evaluation of Available Computer/Communications Information and Information Gaps" (Ref. 4). In this section, the discussion will be limited to the quantitative data relevant for the analysis of the Canadian and U.S. Computer Services Industry.

The main data sources for the Canadian industry are the Statistics Canada Computer Service Industry report (Ref. 8) and the various EDP In-Depth Reports (Ref. 12) and other publications of the Evans Research Corporation. These can be supplemented by the Treasury Board statistics (Ref. 13), annual CADAPSO reports (Ref. 10), annual reports of the major publicly-owned service firms, and articles in the industry press. The most important information gap is the complete lack of published statistics covering the imports of computer services, software services and products. As pointed out elsewhere, Canadian users can obtain such imports either directly from U.S. and other foreign service suppliers, or through intra-corporate transfers in the case of a Multinational Enterprise (MNE). Such imports can only be estimated through user surveys.

The ADAPSO Annual Report (Ref. 16) provides the basic reference source for the U.S. Computer Services Industry, and is considered to be the authoritative statement of historical industry performance with regard to revenues and profit margins. The report also examines the major trends and strategies such as specialization, mini/microcomputer impact and international expansion for the processing, software product and professional services firms which comprise the U.S. industry.

The ADAPSO report can be supplemented by the annual IDC Computer Industry Review and Forecast (Ref. 17), in-depth studies on specific sub-markets published by the various market research firms (IRD, Frost & Sullivan, DATAPRO, Creative Strategies, Dataquest, etc.) specializing in the study of this industry, and articles in the industry press (Datamation, Computerworld, Computer Age, etc.). These sources provide an adequate description of the activities and trends in the U.S. Computer Service Industry, but do not permit an estimation of the volume of computer services and software products exported by the industry to Canadian users. It is also difficult to estimate accurately the proportion of services and products that are purchased from commercial suppliers and the proportion produced by in-house supply.

Appendix IV

A Description of the Services Produced
by the Computer Services Industry

Types of Computer Service

In classifying types of computer service it is useful to distinguish between what might be called "direct" services, which produce the outputs which are wanted by end users, and "intermediate" services or "support" services which produce a necessary input for the "direct" services. This section will not attempt to catalogue all types of direct and support services, but will describe some principal types which have been important or are likely to become important in the next decade. All descriptions are in terms of services desired by users, rather than in terms of products supplied by suppliers.

1. Direct Services

Calculation was the original reason for developing computers, and is still an important class of computer use. Scientists and engineers are often faced with very extensive calculations based on relatively small amounts of data, and often the required calculations would be prohibitively expensive or time-consuming if done manually. Computers make extensive calculations relatively cheaply and rapidly, and are making such calculations both cheaper and faster as hardware and software continue to improve. They provide an important basis for scientific and engineering progress.

Data processing is still the dominant form of business use. The computer makes it possible to tabulate and analyze large masses of data relatively cheaply and rapidly, and to obtain a wider variety of outputs from any given set of inputs. This class of service is the direct descendant of the unit record processing techniques developed for business and government use from the 1890's, using electro-mechanical card punches, counter-sorters and tabulators, and provided the basis for development of today's computer service bureau industry.

Information storage and retrieval became a major class of service in its own right during the '70's. Various computer media can store large volumes of information in much less space than paper records require; online storage makes it much easier to retrieve required data or to use stored data to meet unanticipated requirements. This class of service, which combines the use of powerful central computers, online databases and extensive computer/communications networks is the basis for development of the emerging public on-line information retrieval services industry, as well as for new service offerings by insurance companies, banks and other industries.

Text processing and composition is a class of computer service that has speeded up and cheapened the production of manuals and similar reference material, special price quotation and tender documents, daily newspapers, and a variety of other printed material. The rapidly spreading use of word processors (which are microprocessor or minicomputer based) is part of this class of service. An ever-increasing proportion of source information is now created in electronic, machine-readable form, making it suitable for input to online databases.

Electronic mail, in various forms, has been available for a decade to many computer users, and is becoming steadily more attractive as conventional mail becomes slower and more expensive.

Office automation, a current concern, is not in itself a distinct type of direct computer service but is based on the services of data processing, information storage and retrieval, text processing and composition, and electronic mail. Depending on the approach taken, it may include elements of some or all of these service types. It seems likely to provide a fresh impetus to the growth of computer/communications use throughout the '80's. Specialized office automation devices are not usually included in computer counts or estimates of computing costs. However, with the development of multi-functional terminals/workstations, the distinction between data processing and word processing is breaking down.

Process control - the control of continuous industrial processes - is already an important class of computer use. Its success is encouraging the application of computers in discrete product manufacturing, using CAD/CAM[1] and similar approaches. Robotics is another class of computer-based service useful in discrete manufacturing, inventory handling and other applications (as yet, robots are rarely if ever included in computer counts). These classes of application seem likely to grow rapidly in the '80's.

Domestic services of various types are also projected for the next decade by some observers. The mass market acceptance of such services is not clear as yet. Nor is it clear whether they might be most effectively provided from a central source, in a decentralized manner, or in some combination of the two if they are accepted as necessary, desirable and economic. The mass acceptance of video games and the increasing penetration of personal computers are trends which are likely to have an important impact on the future growth of domestic computing services.

2. Support Services

Data conversion - the transformation of computer inputs to a machine-readable form - is an essential step in obtaining any computer service. Until recently, this process provided jobs to about one-third of all persons employed as EDP staff and, as a service industry group, is probably older than the computer by some decades. Direct data entry techniques have eliminated the data conversion step from many modern computer systems, and Treasury Board data (Ref. 13) show that the share of data conversion in Federal Government EDP budgets has declined from almost 16% in 1975 to under 6% in 1980.

Custom programming and systems design was probably the first distinctive computer support service to emerge. Once computers were no longer an exclusive tool of highly qualified scientists - and even for scientists after the novelty of expressing their calculations in machine language had faded - the programmer became the essential link between the user's data and requirements

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1. Computer-Aided Design/Computer-Aided Manufacturing

and the capability of the computer itself. Custom programming can be done in-house, or contracted out to software service companies. To date, custom programming has accounted for a steadily increasing share of total computing costs.

Application packages designed to meet the general problem-solving needs of such user groups as engineers, accountants or economists, began to emerge in the '60's, and the market for such programs has grown steadily throughout the '70's. The increasing use of small business and desktop computers will provide a growing market throughout the '80's for this economical alternative to the development of custom programs for standard business applications such as accounting, invoicing and inventory management, because many of the users of such computers cannot afford to hire programmers or to learn how to write custom programs. A complementary category of software packages consists of application generators and productivity tools; these can be used both to enhance the productivity of programmers and allow knowledgeable end-users to develop their own systems.

Consulting and training services for computer users were in evidence in the early '60's, and probably grew steadily as a proportion of EDP expenditure throughout that decade. It is uncertain whether these services are still showing relative growth, or whether they are simply growing along with EDP use in general. Facilities management services can be regarded as an offshoot of consulting services; this type of service never achieved much success in Canada, and now seems to be declining even in the United States.

Data transmission services were in use in defence applications from the late '50's, and began to be used commercially by the mid '60's. Initially their cost was high, and their reliability was sometimes less than desirable. By the end of the '60's, both computing equipment and data communications links had improved in reliability. Digital transmission further improved reliability and lowered costs from the early '70's, with the introduction of digital data networks, followed by packet-switched networks. The result has been a steady growth in the use of data communications, and the proportion of total computing costs devoted to data communications seems likely to continue to grow throughout the '80's.

3. Quantitative Information

There are no reliable statistics on the total use or relative use of the various direct and support computer/communications services in Canada. The Treasury Board publishes some information (Ref. 13) on the use of services by most federal government departments and agencies, but these do not distinguish clearly all the service types discussed above, and federal government costs as defined by Treasury Board accounted for only about 7% of estimated total user costs in 1980. Statistics Canada (Ref. 8) provides some detail on the relative importance of some service types to the computer services industry, but the detail of these statistics was significantly reduced after 1977, and the service "industry" as now defined by Statistics Canada accounted for only about 13% of estimated total user costs in 1980. Most observers would agree that data processing and information storage and retrieval are much larger than other direct services, and that custom programming is clearly the largest support service. As long as more than 80% of Canada's use of computer/communications services remains undocumented, it will be difficult to devise even order-of-magnitude estimates of many service types which would be acceptable to most observers.

Appendix V

Recommendations Presented in the
CICS and CADAPSO Briefs

A. CICS Recommendations

1. The Government of Canada should restrict the processing of Canadian data outside Canada by one or more of the following methods:

   (a) The use of telephone systems, satellites, and other utilities for transmission of data across borders should be permitted only under license. Licenses should be granted only for specified purposes, and not for processing Canadian data outside Canada for return to Canada unless the processing is of a 'class or kind not made in Canada'.

   (Communications companies then become associated with government policy, parallelling the present situation where customs brokers participate in the process of importing materials).

   (b) The costs incurred in processing data outside Canada could be disallowed for tax purposes. If the charges are internal within a company, fair market evaluation should be determined.

   (c) Tariffs on data transmitted from the U.S. and on imported software could be established.

   (Telephone companies can easily identify and measure data flows as opposed to voice transmission. They could be the "tariff collectors". This does not mean they would examine the content of the data. It is merely a measurement process).

2. The Government should encourage the development of software packages in Canada by treating the function as research and development. Like other R&D situations, software development would then qualify for a 150% write-off for tax purposes. This write-off should be allowed to the purchaser of packages still in the development stage.

3. Tariffs alone are not enough. Restricting ownership of data processing firms to Canadians is essential.

   (In the earlier case of manufacturing industries, high tariffs increased the desire of foreign companies to acquire Canadian firms and leap over the tariff wall, and thus increased the price of the Canadian firms which in turn increased the willingness of Canadian owners to sell out. If this were to be permitted in the data processing industry, Canada would lose more than just control of an industry. We would lose the experience and ability of the people who sell out. The Government must take steps to ensure substantial Canadian control of an important industry ... before ownership is lost).

4. FIRA should become more familiar with the data processing industry. FIRA will no doubt have to judge the exceptions when foreign firms are permitted to buy into Canada.

(FIRA's record is not good. In the case of ADP, Inc., of New Jersey, for instance, FIRA was apparently confused by the bizarre impression that any one specialized data procesing enterprise includes all other specialties. ADP was in Canada providing certain particular data processing services to automobile dealers. This was seen as reason enough by FIRA to permit ADP to take over the payroll services business of the Bank of Montreal. Now it seems any other data processing enterprise ADP wants to operate in Canada is also acceptable to FIRA. If FIRA can see that shipbuilding is different from making automobiles even though both use bolts and steel, then FIRA can learn that different data processing enterprises are different).

5. A study should be made of the difference to local economies of head office jobs as opposed to production jobs.

(We believe that head offices not only employ higher paid personnel but that the effect on local purchases is far greater. TBDP threatens the prospect of many head office jobs being moved out of the country. We believe the effect of such moves would have far greater impact on Canada than just the loss of computer-related jobs).

B. CADAPSO Recommendations

1. "CADAPSO recommends that regulations be evolved by authorities such as the Department of Revenue, Department of Finance, Department of Industry, Trade and Commerce, Department of Communications and other appropriate departments of the Federal Government to ensure that important data come under their necessary jurisdiction".

2. "The Department of Manpower and Immigration should develop a National plan in cooperation with Industry to alleviate the current and forecasted personnel shortages in the Data Processing Industry".

3. "The Federal Government should establish a Federal-Provincial body charged with manpower planning, especially for EDP personnel. This body could ensure that EDP services can be produced in any Province or location to eliminate the necessity of TNCP by the MNE's".

4. "The Federal Government should establish policies which require that all EDP activities purchased by any level of Government must be from data centres located in Canada. Further, through such acts as The Bank Act, The Telecommunications Acts, The Trust Companies Act, The Insurance Companies Acts, etc., require that these industries also carry out all EDP processing in Canada".

5. "Laws be enacted by the Federal Government to define services of the nature produced by the EDP service industry in the same manner as a tangible product is defined so that the anti-dumping laws of Canada may be applied to the dumping of services from Foreign countries into Canada".

6. "The rules covering FIRA review should be ammended to include the review of firms engaged in the importation of services which are provided from outside of Canada, even if such firms are owned by Canadians".

7. "Importation of Data - the raw material used in Processing should be unfettered by regulation. The availability of this raw material is crucial to Canadians if we are to be effective in the International Community of Nations".

8. "The Federal Government should continue to encourage and aid the export activities of Canadian Computer Services firms. Trade Missions, Trade Shows abroad, International Marketing Aids are all valuable and should be continued".

9. "Statistics Canada should devise a survey to produce data from foreign-owned MNE's on the value of the TNCP accomplished abroad and by whom, i.e. the parent or foreign independent EDP company".

10. "The CRTC together with the Provincial regulators require the members of the Trans Canada Telephone System to reevaluate the costs of data communications and their regulations relating to it now in place. By providing significant cost reductions and liberal equipment interconnection, all CADAPSO members, large or small will benefit. EDP services will be economically available to all users in Canada, produced in Canada".

11. "The Federal Government should provide incentives for Service companies to import hardware to be used in Canadian companies. This would provide a significant incentive for computer users to purchase services in Canada rather than to import them".

12. "An overall plan should be devised by the Federal Government which would make opportunities clearly available to all computer service companies, CADAPSO members or not".

13. "The Federal Government should phase out all internal EDP organizations over the next 5-7 years and contract out all its requirements to the Canadian EDP Services Industry".

14. "The Government should treat all software development by data service companies as eligible Research and Development expenses for tax purposes. Firms should be allowed a write-off of 150% of such activities".

15. "Software, services, programs, etc., must be properly defined in law and the law must provide protection to authors of programs, software manufacturers, service companies, etc. The Government should review the Copyright Act and make provisions for this new technology".