Statistical Observer

Contents

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Introduction

This is the first issue of the Statistical Observer. It is a publication intended to meet the need for a greater exchange of information primarily of a statistical or statistical research nature among professionals in these and related social science fields in Canada.

The suggestion that there should be such a publication is not a new one, especially as a means of ensuring communication between DBS and its counterparts in the provinces. It was the subject of a resolution at the Federal Provincial Conference on Economic Statistics in May, 1967, and some planning had been done on it earlier in DBS.

Although there is a considerable exchange of information on statistical and research projects now through various professional conferences and otherwise, we expect that a publication specifically for this purpose in Canada will be a further help. It is intended to contribute toward informing economists, statisticians and related professionals throughout Canada about selected statistical and research developments undertaken in DBS, in other Federal departments and agencies, in provincial departments, in universities, and in business and independent research organizations. It is designed as a medium for exchanging information rather than as a vehicle for urging that programs be undertaken or modified.

The Observer will include short descriptions of new projects, or of developments within existing projects rather than attempting to give full details. Readers interested in more complete information will presumably communicate directly with those responsible for the development concerned.

Some of the developments described in this first issue cover a period of several months. In future issues we will try to provide information on a more timely basis. The publication will be issued as frequently as the need indicates, but probably not more than quarterly, at least in the initial period.

Suggested articles for future issues should be sent to W. Pharoah, Information Division, DBS, (Telephone 996-2752). He is also the person to inform of any persons you may want to place on the mailing list. There is no charge for the Statistical Observer.

Because of the problem of getting information for a first issue from all, coverage in this one is not as complete as it might be. It is hoped that contributions from those concerned with developments that are of interest will make future issues more representative than has been possible this time.

Feature

Better Timeliness Aim of Current DBS Effort

A determined drive has been mounted by DBS designed to show significant timing improvements in several key aggregative monthly series by the end of the fiscal year 1967-68, with the ultimate objective of improving the timeliness of all DBS series. Leading the drive is a timeliness committee comprised of senior officials of the Bureau under the chairmanship of Dr. S. A. Goldberg, Assistant Dominion Statistician. The aggregative monthly measures to be dealt with initially include the index of industrial production, over 100 commodity series that enter into the index, exports, imports, the monthly employment survey, retail sales, and current shipments, inventories and orders. For these series improved timing targets have been set up to be met by the end of the fiscal year along with longer range targets to be attained in the next 1 to 3 years.

To facilitate the committee's work, a record system is being evolved which will provide uniform information throughout the Bureau from form design through mail out, follow up, manuscript preparation, printing, release, etc. Such a system has been implemented for certain surveys, and is being extended to others.

An indication of the way in which considerable timing gains have already been achieved is best provided by a description of the work on the current monthly manufacturing and mining commodity surveys. For each of 121 monthly surveys, all important ('must') respondents have been identified and those who, in the recent past, had not generally reported soon enough to meet target dates, were contacted by telephone. The importance of the DBS timeliness program as well as their role in it was explained to them and their active co-operation was sought. The general reaction was most favourable and as a consequence, data have been received and published earlier.

The lists of 'must' respondents that have been prepared for these commodity surveys, as well as for other more aggregative series such as the monthly employment survey, are designed to form the basis of early sets of advance estimates for use both in national economic aggregates such as the monthly Index of Industrial Production, and for early release in their own right. Thus, users may note a greater incidence of revisions in such series for the most recent month or months. These will have originated because DBS will compile data based on incomplete response, by estimating or imputing for non-respondents at specified cutoff points. The methodology involved in these early estimates is designed to keep the magnitude of such revisions to a minimum.

The monthly employment survey has also undergone considerable study since the timeliness program began. An entirely new set of specifications for the monthly survey is being developed which involves substantial additional computerization. This updated system is scheduled to be operational by May, 1969.

In the interim, in an attempt to achieve improved timeliness by the end of the present fiscal year, a supplementary program is being developed, so as to exploit to the fullest extent those employment survey returns which have been received by the Bureau at an early date in the reporting cycle. Basically, this involves a paired-sample imputation, whereby monthly movements for non-respondents are estimated by movements shown by early respondents in particular industry cells. This is further supplemented by professional analysis and review. Tests have proved that the results of these early cutoffs are quite satisfactory, given a reasonable degree of coverage. The intention again is both to publish such early aggregations as are warranted by quality considerations, as well as to provide detailed labour input series for use in the current monthly Index of Industrial Production.

In order to improve timeliness while keeping the degree of imputation to an acceptable level, the Labour Division of the Bureau has also undertaken a program to solicit co-operation through direct contact with many of the more important respondents.

In the area of Exports and Imports, a considerable effort is also being made. Firstly, staff is being reorganized along more specialized commodity lines; this has already served to improve timing as well as to achieve better quality coding of customs documents, the source of basic data in these areas. Work is also in progress to develop techniques for sampling of low-value entries. This area of work does not lend itself, of course, to generally used imputation techniques for non-respondents, because of the unique nature of individual commodities traded internationally.

These are merely the highlights of some of the activities taking place in the Bureau to improve timeliness. Although the initial effort has been concentrated on monthly measures, series with different periodicities are not being overlooked. For example, one long range program being developed is aimed at improving the timeliness of series such as the annual Census of Manufactures. Problems in this case are, however, somewhat different since these represent, in a sense, complete and final counts. Nevertheless, the Bureau is now considering an earlier release of some aggregative information, to be followed up later with the complete range of commodity output and input data, etc., normally found in Census publications.

As well, efforts will shortly be made in areas outside what might be termed economic statistics, branching out to cover other fields related to social and financial statistics.

In the overall program, the Dominion Bureau of Statistics is taking every step necessary to speed up its handling and processing of basic data, as well as to exploit to the full such incomplete information as may be available, consistent with statistical quality considerations. It must be realized, however, that to a considerable extent, improvements in timeliness are dependent on the co-operation of respondents. DBS respondents are to be found in the entire range of activities in which Canadians are engaged, from business and research organizations through other Federal Government departments and agencies to provincial government departments. Their co-operation is essential to complete success of the timeliness program, and their suggestions and advice would be most welcome.

New Projects

Integration of Establishment And Company Data Studied

A highly complex project intended to integrate company and establishment data is underway in the DBS. Both the development of the Central List (of respondents to DBS surveys) and in particular the availability of fuller corporate financial data have increased the demand, both inside and outside DBS, for such integration. At present, production inputs and outputs such as sales, inventories, employment, etc., have been collected by the different divisions of the Bureau on an establishment basis. Meantime, financial statement returns have been collected by other divisions of the Bureau principally on a company or enterprise basis. The advantages accruing from integration will affect the accuracy of the reporting system and will yield a clearer perspective.

Essentially the project will examine the feasibility of developing a reporting system for corporations and their establishments which will ensure that, where appropriate, respondents relate or integrate in a consistent fashion, at the reporting stage, statistics which apply to different levels of the same organization, the establishment, the company or the enterprise. The opportunity for developing closer integration of financial and production data is better in Canada than in other countries now that annual and quarterly financial statements data are reported directly to DBS. The annual financial series has become available recently under the terms of the Corporations and Labour Unions Returns Act.

The main task is to render more flexible and efficient the existing system of data flow with the least amount of dislocation in present procedures and to impart a greater degree of coherence so as to obtain information for studies of output, productivity and other inter-related determinants. Further, additional statistical information would become available for the construction of input-output, real output, national accounts and financial accounts series and various types of econometric models.

Small Area Estimates of Population Planned

Experimental work to improve DBS population estimates is proceeding in the Bureau's Regional Statistics Research and Integration Staff. In the past, annual and quarterly estimates of population between census years has been limited to provincial breakdowns and to estimates for metropolitan areas and large cities. Under development is a system to break the annual estimates down to county and census division detail and possibly later to census sub-division detail. For county estimates, attention is centered on two main estimation methods (ratio correlation and component method II) both of which impute population estimates from other data available for between census years.

At present, census estimates are derived by starting with the count at the last annual census, adding births and estimates of immigration, and subtracting deaths and estimates of emigration.

In addition to widespread use of population estimates by provinces and by business, DBS uses them itself in producing other data. One important DBS use is in estimating the labour force by age group and sex from a monthly sample survey.

Profile Interviews Used For Job Vacancy Survey

Senior statisticians and researchers from DBS got down to the "grass roots" in the closing months of 1967 as they explored problems encountered in measuring current labour demand.

They worked in the field, side by side with new staff hired to operate the Job Vacancy Survey, conducting interviews to obtain organizational profiles to evaluate the quality of reports. Later they compared notes in workshop discussions. Their experiences have led to changes in survey procedures and in the questionnaire used, although the original concept remains unchanged.

This new survey, undertaken by DBS for the Department of Manpower and Immigration, was initiated for large manufacturing firms as a development project in September 1967. It will be extended to include the remainder of manufacturing and other industries during 1968. It is intended eventually to complement the Labour Force Survey which assesses the current labour supply each month. It is not expected that useable information will become available until 1969.

Basically it will be carried out by mail, but profile interviews were initially undertaken to help determine how companies could best report vacancies, and also who, within the company, was the person best qualified to complete the questionnaire.

Following up the mailed questionnaire a large number of interviews will take place. These interviews are an integral part of the survey, designed to gather new information, as well as to provide a basis for determining correction factors for the mail phase.

The workshop experience has revealed that a less structured interview should replace the earlier formal interview questionnaire.

Pilot Manpower Study In Northwest Territories

Last summer, at the request of the Department of Indian Affairs and Northern Development, DBS undertook a test program in the Northwest Territories to determine the feasibility of manpower surveys in that region.

The area covered in the test program was entirely in the MacKenzie District and included the following places: Coppermine, Fort Providence, Fort Resolution, Rocher River, Pine Point, and Hay River.

The test program was conducted with a small staff that moved from Ottawa to Hay River. Local enumerators were hired and trained. The enumeration itself lasted three weeks. Evaluation of the survey is still underway.

Manitoba Royal Commission on Northern Transportation

A Royal Commission on Northern Transportation established by the Government of Manitoba is to inquire into all aspects of transportation related to the economic development of northern Manitoba. Existing and future activities of and requirements for road, rail and water transportation will be examined in detail; consideration will also be given to new modes and techniques in the transportation field. The need for, and means of integrating existing and new transportation modes for the most efficient use of transportation resources will also be covered.

The Royal Commission is headed by Arthur V. Mauro, Q.C. and the Research Staff is directed jointly by Professor S. Trachtenberg and Mr. D.J. Sandell. These men have met with officers in a number of Federal Government departments and agencies to obtain the benefit of Federal Government

experience in transportation systems and techniques in Canada's North.

Of prime importance to the Commission, will be certain data compiled by DBS. Initially, the Commission will require DBS data on the social and economic characteristics of northern Manitoba communities and settlements. As economic planning and development call for detailed information on labour force, employment and income data, to that end, the Royal Commission plans to begin a socio-economic survey. The methodology of the survey has not yet been finalized but steps have been taken to ensure technical advice by DBS personnel.

D.J. SANDELL
Manitoba Royal Commission on Northern Transportation

Census Test: London

A full-scale test of a population census by mail was carried out in September 1967, in London, Ontario. Tabulation of some of the results indicates that a census-by-mail may be workable with advantages that include improved quality and potential savings in costs and time. Other census tests for selected Canadian centers in 1968 are planned to determine if other aspects of a mailed census of urban areas are feasible and economical as part of the 1971 Census of Canada. The London test was the first population census-by-mail to be undertaken in Canada.

The population of London had grown to 201,931 according to the census, an increase of 7,515 since the 1966 Census of Canada. This increase of 3.7 per cent is almost double the national growth rate of 1.9 per cent between 1966 and 1967. London also gained 3,234 occupied households since 1966 for a total of 59,497.

A complete mailing list of London households was compiled in October 1966, in preparation for the test. This list was checked both in May and August 1967 with the assistance of the London Post Office. About 85 per cent of some 60,000 census forms mailed to London households were returned by mail. Of the balance, many were delayed because of individual problems in completing the form, but they were picked up in the traditional door-to-door method by DBS employees hired locally.

In the Provinces

Newfoundland

An Economics and Statistics Division has been established in the Department of Finance, Government of Newfoundland and Labrador. The Division is divided into sections providing economics services and statistical services and is responsible for federal-provincial fiscal relations. This new Division will also analyse provincial revenues and expenditures and review trends in the financial markets. Further, the study of economic conditions as they affect fiscal planning and programs will be undertaken by the Economics and Statistics Division.

The prime function of the Statistical Service is to assist the Economics Service in performing the various projects necessary to carry out its research functions. The Statistical Service will advise on forecasting techniques. It will also collect, compile and advise on problems related to the interpretation of statistical information and, where necessary, design questionnaires and samples. It will test the reliability of estimates, suggest appropriate methods of graphic and tabular presentations, and generally advise on any problem of a statistical nature.

The Statistical Service represents the Department of Finance in Federal-Provincial, inter-provincial and inter-departmental discussions aimed at improving statistical information services to government departments. The Service answers inquiries concerning financial statistical information from government departments, industrial groups and interested individuals. It will also prepare an annual statistical review of the province and hopes to publish a monthly chartbook illustrating the current trends of selected economic indicators.

During the formative stages, the Statistical Service has been working closely with various DBS personnel, and, in particular, with the Provincial Liaison and Consultative Services of the Bureau. Consultative Services is providing the expert assistance needed in establishing the Statistical Service and hopes to make available various DBS personnel to assist in solving special problems.

E. POWER
Statistics Branch
Department of Finance

Nova Scotia

Current developments of interest in Nova Scotia relate to work in provincial product

accounting, tourist research, and trade statistics. A number of on-going programs in various provincial departments have made use of relevant DBS data, and some of them involve co-operative arrangements with DBS.

The Dalhousie Institute of Public Affairs in Halifax has been retained to prepare income and product accounts for the Province of Nova Scotia. The work was begun by Dr. Stanislaw Czamanski of Cornell University as part of the ARDA Task Force study of North-Eastern Nova Scotia. The document now being prepared is broader in its conceptual base and more detailed in its treatment of the data. It is anticipated that the study will provide inputs for a provincial econometric model which is also being prepared at this time. As well, it is hoped that the accounts, when completed, will help to delineate problem areas in the economy.

In travel research over the 1967 season, the Nova Scotia Department of Trade and Industry interviewed airplane visitors, based on a probability sample set up by the staff of DBS; tested automobile interview questionnaire designs; continued analysis of previous surveys, and studied the effects of tourism on the government and the economy.

The Department of Trade and Industry in Halifax, plans to issue the first edition of the Nova Scotia Export Quarterly by the end of 1967. The main section of the report will provide commodity statistics of Nova Scotia-produced exports. At present the External Trade Division of DBS provides data based on province of customs clearance, for Nova Scotia and New Brunswick.

R. E. DROVER
Department of Trade and Industry

Quebec

The Quebec Bureau of Statistics is preparing a number of studies on the use of the basic components of the index of business concerns. This index has gone through several important developments lately that will permit the incorporation of administrative data, the improvement of the up-dating methods, the development of a system to go from an administrative index to a statistical one and, finally, the establishment of a central index.

Q.B.S. recently conducted a survey and some statistical work concerning financial institutions and commercial groups doing business in Quebec. Originally, the work was conducted along the lines of a census, and subsequently along the lines of an inventory of the operations of each institution. By the latter method Q.B.S. hopes to be able to readily identify economic indicators reflecting the activities connected with business transactions carried out in Quebec, in relation to such operations as a whole. A further objective of this method is to determine the commitments financial organizations maintain with Quebec residents in relation to their investments. Moreover, these research projects aim to assess the contribution of financial institutions to the Quebec economy. Simultaneously an inquiry into the various economic sectors' role in the provision of funds to finance business and industrial undertakings and financial institutions themselves is to follow. In addition, an examination of the structure of financial undertakings is yet to be undertaken. From the statistical information collected for each group of institutions or commercial groups economic studies larger in scope than those which deal solely with statistics may be feasible.

Q.B.S. now has a very elaborate economic accounting system which will enable the Quebec Government both to analyse and forecast – on the basis of computed data – the major operations of the Province's economy. An econometric model underlying the economic accounting system can now be evolved. The major role of such an econometric pattern is to assess the impact, on the various sectors of the Quebec economy, of the changing exogenous factors affecting it, and of the spontaneous changes which might occur within the Quebec economy. Such an econometric model could be used, for instance, to estimate the probable effects on the Quebec economy of Federal policies in the taxation or monetary fields, or in external trade. The econometric model will also help analyse the probable consequences of a change in the final demand on the market and on the different sectors of the economy.

R. GAGNÉ
Quebec Bureau of Statistics

Ontario

The former Statistics Branch of the Department of Economics & Development was established in 1966 as the Ontario Statistical Centre and it now operates as an integral part of the Office of the Chief Economist.

The primary objectives of the Centre are to collect, store and produce statistical information in the framework of the general purpose information system. There are four sections in the Centre:

1 *The Statistical Standards and Research Section* is responsible for statistical research, sample designs and for developing common coding and classification systems. The Section co-operates with the Ontario Department of Labour and the Department of Municipal Affairs in conducting a number of surveys. It provides technical advice in sample design and statistical research to other sections of the Centre and other branches of the Department. It also prepares directories for trade promotion purposes.

2 *The Interdepartmental Services and Special Assignments Section* has as its main objective the collecting, compiling and storing of significant socio-economic data from various sources. It also compiles statistics from administrative data available in different departments and agencies of the Ontario government and in the municipal governments. Projects are conducted jointly with the Departments of Financial and Commercial Affairs, Municipal Affairs, and the Pension Commission of Ontario. The section also acts as liaison between the Statistical Centre and other departments of the Ontario Government, and is responsible for answering statistical inquiries from the public, from business and researchers.

3 *The Applied Statistics Section* has dual responsibilities. It conducts the Census of Manufactures jointly with Dominion Bureau of Statistics using DBS forms. This Section has been recruiting staff and is now close to the budgeted complement. Another project of this Section is the preparation of input-output tables for the province. Data collection is scheduled to commence shortly.

4 *The Systems and Programming Section* is composed of both scientific and data processing programmers and systems analysts. It has already completed preliminary development of a basic integrated system of statistical programs for ordinary manipulation of general data files. Program components include data selection, description (including visual display), correlation, regression analysis, canonical analysis, time series analysis, and cross spectrum analysis. The Section is presently developing a generalized file system. This will allow for file construc-

tion in a standardized form on tape, disk, or a combination of both.

KENNETH CHENG
Ontario Statistical Centre

Alberta

Presently in progress is an analysis of the extent to which production in western Canada is resource dependent. Specifically, this study is to ascertain the nature and relative size of primary production in each major resource-based industry, and the extent to which primary products are processed in western Canada.

The Alberta Bureau of Statistics offices are now located in the heart of downtown Edmonton. The new address is

Alberta Bureau of Statistics
1529 – Centennial Building
Edmonton, Alberta.

This recent move brings together, for the first time in many years, all branches of the Alberta Department of Industry and Development.

D. I. ISTVANFFY
Alberta Bureau of Statistics

British Columbia

In a dynamic economy such as British Columbia's, statistical patterns, of necessity, are required to change. Three such changes are now in progress:

1 Continuing discussions have been held with the Dominion Bureau of Statistics concerning an increase in the number of census divisions for the Province to cope with the economic and statistical requirements of a rapidly developing economy. In many instances, these proposed divisional boundaries conform to recognized provincial administrative units such as hospital districts, regional districts, etc.

2 Joint Federal-Provincial participation in collecting organized labour data is well underway. Similarly, a salary and wage rate pilot study which entails Provincial Government contacting or interviewing about 100 major employers is being undertaken.

3 The B.C. Bureau of Statistics Data Processing Division centralizes most of the work done on data processing equipment. As a result, the Bureau has a surprisingly wide variety of machines and techniques available.

M.H.A. GLOVER
B.C. Bureau of
Economics and Statistics

Conferences

Joint Statistical Meetings, Washington, D.C.

Washington was the location (between December 27-30, 1967) of the Annual Joint Statistical Meetings of the American Statistical Association, The Institute of Mathematical Statistics, and the Biometric Society (Eastern & Western North American Regions). The meetings were part of a joint program of the Annual Meetings of the Allied Social Science Associations held in Washington at the same time. At the Joint Statistical Meetings distinguished economists and statisticians drawn from various disciplines had a packed program and worked to a tight schedule. The Meetings embraced a wide range of subjects including:

i Population Projections for Small Areas;
ii Social Statistics;
iii Applied Multivariate Analysis;
iv Demography;
v Reliability Theory;
vi Data Analysis;
vii Sequential Theory;
viii Genetics;
ix Biometrics;
x Manpower Analysis; and
xi Regional Economic Models.

The papers presented are too numerous to summarize here, but we append a few notes on Canadian participation. For those interested, the 1967 Abstracts Booklet of the papers presented at the Joint Statistical Meetings is available from the American Statistical Association, 810, 18th St. N.W., Washington, D.C. 20006 (price $1.00). The Econometric Society's booklet on Preliminary Program and Abstract of Papers contains summaries of the papers discussed at their Washington Meeting. A booklet Joint Program Allied Social Science Associations, Washington, D.C. contains the programs of the various sessions held in Washington.

W. D. Porter, Director of the Census Division, DBS, was the Chairman at the session organized by the American Statistical Association, on "Aspects of the 1966 and 1971 Census Programs in Canada". A full-scale test of a census by mail was carried out by the DBS Census Division in London, Ontario, during 1967. The last ten years have seen a great deal of experimental work leading to a better understanding of census methods and data. At the same time demand for census statistics has increased enormously.

Dr. I. P. Fellegi and Dr. K. J. Krotki of the Dominion Bureau of Statistics presented

a paper on "The Testing Program for the 1971 Census of Canada". The testing program was motivated by the following main considerations:

1 Examination of methodological changes in taking a census. This included the testing of:
   a self-enumeration work with or without the use of mail delivery;
   b use of address registers for mailing purposes;
   c automatic geographic coding.

2 Setting up of the organization required to cope with the new method. This included:
   a editing questionnaires locally;
   b telephone follow-up;
   c personal follow-up and coding.

3 Improvement of coverage. The use of postal checks and quality control were designed for this purpose. A measurement of under-coverage in the London census test is provided by the post-enumeration survey.

(The main advantage of a self-enumeration census is that it is more accurate than traditional methods because it eliminates the contribution of enumerators to the total error, since each adult member of the household answers the census questions for himself.)

Finally, the paper deals with the following subjects:
   a the provision of data early in machine readable form and in a form more consistent with other sources and uses of data;
   b attempting to meet new and more detailed needs of users;
   c computer edit – which deals with edit and imputation of data;
   d experience with address registers as a potential vehicle for mailing out census forms;
   e further methodological tests such as testing of questionnaire, alternative wording and format, etc.

After a comparison of the differences in census taking in Canada and the United States attention is drawn in the paper to the method of census taking by mail with an edit and follow-up control from the London (Ontario) office in September, 1967. Further the evaluation program proposed and partly carried out in conjunction with this test is outlined in the paper and the tentative plans for continued testing prior to the 1971 Census are summarized. Comments on address forms, registers and experiences with the production side of the mail census are also made.

Other problems concerning the Census are dealt with from a different angle in another paper by Dr. I. P. Fellegi and J. I. Weldon in "Computer Methods for Geographical Coding and Retrieval of Data in the Dominion Bureau of Statistics". Public and private agencies increasingly demand statistical information specially from census data tabulated by user-specified areas. It is also desirable that statistical organizations provide custom-made tabulations promptly and at reasonable cost. Experimentation is underway in the Bureau to develop an integrated system of computer programs for storing and retrieving census data and for the subsequent processing of statistical tabulations. The essential features of the proposed system are geo-coding the enumerated addresses by structuring census data in randomly accessible form and by providing a generalized query language permitting a non-programmer to retrieve relevant information.

The paper suggests that the level of reliability of the retrieved sample will have to be monitored by both the users of statistics and the statistical agency. Additional work on the implications of sampling and confidentiality requirements remains to be done.

A third paper presented by Dr. K. J. Krotki, R. C. Muirhead and R. Platek (all of DBS) is entitled "Evaluation Program of the 1966 Census of Canada". It provides a historical and theoretical explanation of the 1966 Census techniques. The purpose of the evaluation program was to establish a measure of under-enumeration of the 1966 Census of Canada for national, provincial and regional areas. The evaluation program consisted of the following studies:
   i the reverse records check of the enumeration of individuals during the 1966 Census, vital registrations records, and international migration records since the 1961 Census. This project was used to provide a measure of under enumeration in the 1966 Census by various age and sex groups of the Canadian population;
   ii the matching of census questionnaires with Labour Force Survey documents. This technique is expected to enable DBS to measure the coverage and content error in the Census;
   iii the coverage results of the quality check for agriculture. These content investigations aim at isolating types of errors contributing most significantly to census inaccuracies;
   iv the demographic analysis of age and sex distributions in 1961 and 1966;
   v a list of households produced for the census purposes in two cities – Waterloo and Kitchener – has been checked against a number of other sources of addresses, including the field listing of households in London, Ontario produced for the 1971 program; and
   vi the study of postal change of address cards was aimed at establishing the difficulties of enumerating the mobile section of the population. Some 2,000 cards have been compared with relevant 1966 records.

Inquiries concerning the papers presented by the Dominion Bureau of Statistics at the American Statistical Association meeting may be sent to the authors concerned.

Two DBS Papers Presented to I.S.I.

What are the main forces at play in the shaping of statistical programs for a country at Canada's level of statistical development? This was the question dealth with by Dr. S.A. Goldberg, Assistant Dominion Statistician, DBS, in his paper on "The Demand for Official Statistics and their Utilization in Canada with Special Reference to the Role of National Accounts". The paper was presented at the 36th session of the International Statistical Institute held in Sydney, Australia, last fall.

Dr. Goldberg began by commenting on three interrelated questions. First, what are the processes of detection and evaluation of the demand for, and the use of, official statistics? Second, what factors can be credited with rendering some demands successful in that they are accommodated by the statistical office, while others remain unsatisfied? Third, what has been the role of the national accounts, among other forces, in demand generation and in enhancing the utilization of statistics? Attention is drawn in the paper to the role of specialist subject-matter committees in DBS and joint Federal-Provincial consultations in assessing statistical needs. The importance of a "strong survey capability" is underlined in providing a better chance for demands to become effective.

Computerization in DBS will affect demand satisfaction in four important ways.

First, a vast volume of work will become possible at a smaller cost with higher precision and speed. Second, for efficient utilization of the computer, the complex elements of a survey must be viewed as a highly integrated and interrelated operation, with additional gains in terms of efficiency, timeliness and the quality of the data. Third, the necessity of proper computer-time utilization leads to the articulation, codification and standardization of concepts, definitions, classifications, methods, procedures and formats, and thereby to a more complete integration of items of data from various surveys, and simultaneously facilitates joint or interrelated use of information from various sources. Fourth, computer technology promises to facilitate the development of packaged retrieval and manipulative programs which will provide users, on request, with detailed and analytic arrangements on data to their own specifications.

National income and expenditure accounts greatly influence the demand and utilization of economic data as they provide an indispensable quantitative framework for effective economic and statistical analysis.

The other paper presented by representatives of the Dominion Bureau of Statistics at the Sydney Conference dealt with the problem of data storage and linkage.

This paper was by Dr. I. P. Fellegi and A. B. Sunter and entitled, "An Optimal Theory of Record Linkage". It Attempts to provide a mathematical model for a computer-oriented theory of record linkage. Four important factors were cited as contributing to the need for such a model:

a the creation, often as a by-product, of administrative programs of large files containing important statistical information whose value could be heightened through linkage of individual records and the interrelation of statistical information contained therein;

b the vastly increased need for frequent and detailed statistics, often for small areas, which it would be most expensive to satisfy through sample surveys or censuses;

c increased awareness in many countries of the potential of record linkage in in medical and genetic research; and

d advances in electronic data processing machinery and software, which make it appear tantalizingly feasible to carry out the huge amount of operational work of comparing records between even medium size files.

The paper presented by Dr. I. P. Fellegi and Mr. A. B. Sunter on "An Optimal Theory of Record Linkage" attempts to fill a hitherto existing gap by providing a mathematical model for a computer-oriented theory of record linkage. This theory is intended to provide a basis for a statistical inference to be made concerning the match status of two records, one from each of two files.

Inquiries concerning the papers should be addressed to the authors at DBS.

Meeting at DBS on Analysis of Service Industries Data

Discussion was effectively stimulated by a number of well prepared papers at a meeting in Ottawa on October 20 and 21, 1967, of the Conference on Research in Income and Wealth of the U.S. National Bureau of Economic Research. The organizer was Victor R. Fuchs of the NBR and the subject was "Production and Productivity in the Service Industries".

The Conference was held to discuss the implications for statistical and economic analysis of the growing importance of the service industries to the U.S. and Canadian economies. The service industries sector have been increasing in importance in the economies of both countries. This fact has obvious and strong implications for economic analysis and policy, and hence calls for an adequate statistical base and for clarification of basic concepts and theory relating to these industries. The Conference agreed that conceptual research and statistical development relating to this area should be faced now and with some urgency.

By convention or of necessity, a wide range of input measures of one kind or another are used in order to estimate real output in the service industries. Normally, constant price intermediate inputs are deducted from constant price output to yield the desired real Gross Product Originating. This is done wherever an industry can report sources of operating revenue and purchases of intermediate inputs. This approach is universally followed, at least in commercial or profit-motivated industries, and with the notable exceptions of the banking industry and the credit agencies, holding and other investment company industries, where normal revenue and expense items (to these industries) reflected in profits, are reversed with the result that these industries are depicted as negative contributors to G.N.P. To avoid this illogical result imputations are added for institutions accepting deposits. These imputations are primarily based on input concepts and may not be useful for the measurement of real G.P.O.

The problem is best illustrated by looking at the results of the Office of Business Economics approach to a real G.P.O. measure for banking. In a paper presented by Martin L. Marimont of the O.B.E., Table I indicates that the constant dollar contribution of banking to real G.N.P. has fallen dramatically compared with its current dollar contribution, and is clearly quite different from other industries. A look at employment data for banking will substantiate the view that if one accepts the validity of the real G.P.O. series prepared by the O.B.E. then one has to accept a sharp and long-term downward trend in the labour productivity ratio. This decline is apparent over the entire two decades covered and, since it is of the order of nearly two percentage points per annum on average, it is highly suspect. Conceptual problems in these industries are not limited to any one country, but are common in the field generally.

It is difficult to accept the fact that industries such as credit agencies, holding, and other investment companies, make a negative contribution, to G.N.P., in spite of the imputation added to savings and loan associations. Banking would certainly be in the same position were it not for the service cost imputation made there. These phenomena are not logical when attempting to measure output or productivity for such industries. A strong view was expressed that the conventions associated with measurement should be re-examined. The convention of using labour input to measure the output of non-profit institutions and of government was cited.

Other points emerged that may be of interest, including the fact that in both Canada and the U.S., more than half of the labour force is now engaged in the service industries: that this long term shift to services is still continuing and income elasticities do not explain it. There are indications that productivity is not growing as fast in the service industries as in the goods industries even though there could be some downward bias in the present service industry measures. There are profound differences in the trend

of labour quality in the two sectors, and productivity is less stable over the business cycle in the service industries than in the goods industries.

There are still many unknowns however including such questions as the relation between growth and productivity, the desirability of including development costs (inclusive of human resources) in output, the effects of unionism on productivity, the evolving nature of technological change originating with labour quality and other resources between goods and service industries, the significance of elasticities of substitution for the service industries, and the adequacy of the present conceptual framework of the national income accounts for service output measurement.

Overall, the measures used for service industries depict a story of incomplete and inadequate statistical data for an economic sector which is growing in importance, and the story seems to be international in scope. From a conceptual point of view, the solution of the problem is difficult.

There was some feeling expressed that the difficulties may not soon be overcome in any basic sense. Others felt however, that efforts to make progress in measuring these increasingly important industries must be intensified and that the quality of the papers presented will go a long way toward provoking the necessary discussion which hopefully, will bring us closer to solutions.

A better appreciation of the range of subject matter covered at the meeting can be obtained from the papers presented, which were:

1 Measuring Real Output for Industries Providing Services - - - OBE's Concepts and Methods by Martin L. Marimont, Office of Business Economics;

2 What is Output? - - Problems of Definition and Measurement by Arthur B. Treadway, Northwestern University;

3 Some Problems in the Measurement of Productivity in the Medical-Care Industry by Melvin W. Reder, Stanford University;

4 Alternative Measures of Real Output and Productivity in Commercial Banks by John A. Gorman, Office of Business Economics;

5 The Growth of Sales per Manhour in Retail Trade, 1929-1963 by David Schwartzman, New School for Social Research;

6 The Service Industries in Canada, 1946-66 by David A. Worton, Dominion Bureau of Statistics;

7 The Service Industries in the 19th Century by Robert E. Gallman, University of North Carolina, and Thomas J. Weiss, University of Kansas.

Inter-American Statistical Conference: Venezuela

The Dominion Statistician, Mr. Walter E. Duffett, was present, as representative of Canada, at the Fifth Inter-American Statistical Conference, held in Caracas, Venezuela in October. He was accompanied by Mr. A. B. McMorran, Director of the Tabulating Services Division of DBS.

Canada is a member of the Inter-American Statistical Institute which arranges these conferences. The main topic of the fifth conference was a program of development and organization to improve the effectiveness of statistical offices.

A sub-Committee known as the "Committee for the Improvement of National Statistics" held meetings for most of one week. This committee normally meets more frequently than the main conference, and is a working committee of heads of statistical offices. At present it is engaged in developing basic standards for social and economic statistics in Latin America.

Owing to the great interest in Latin-American countries in Canadian experience in the use of computers for statistical purposes, Mr. McMorran spoke at a technical meeting on this subject, organized by Mr. Duffett. Mr. McMorran's paper traces the development of computerization in DBS since the 1951 Census of Canada and examines the more important problems confronted in the processing of data and the installation and rationalization of computer applications. Due to census processing requirements and demands for additional data in all census fields, DBS acquired one IBM 705 and one IBM 1401 computer system in 1960. While regular statistical functions were increasingly computerized, limitations by way of shortage of programmers until mid-1966 constituted serious restraints on computer operations. Report generator or simulation programs for a large part of the tabulating work were used pending transfer to fully programmed computer processing to meet, at least in part, the shortage of programming resources.

Copies of the paper "Electronic Computers in Data Processing" may be obtained from Mr. A. B. McMorran, Director, Tabulating Services Division, DBS, Ottawa

Fifty Papers Presented at 10th IARIW Meeting

About 140 persons attended from 32 countries (including Canada) when the 10th General Conference of the International Association for Research in Income and Wealth was held last August at Maynooth, Ireland. Some 50 papers were presented.

The papers were divided into groups which were then dealt with at the various sessions. The first four sessions, held on August 21st and 22nd, were concerned with deflation and the measurement of production, including construction, quality changes and prices. The topics of other sessions included education and government, centrally planned and developing economies, forecasting, financial accounts, input-output analysis, and the proposed U.N. System of National Accounts and its relationship to the Material Product System.

Among the topics discussed at the session on deflation were the following:

1 The need to pay much more attention to prices.

2 The need to determine the accuracy of available data in an objective way.

3 The need to fully inform the public of data inadequacies.

4 The need to "fill in" the System of National Accounts in order to reflect the importance of such items as transfer payments.

5 The need to measure productivity and therefore the need to measure all inputs in constant prices.

6 The need to determine the interrelations between components of the System of National Accounts, in particular through studies of embodied technology, terms of trade, and production functions.

The papers presented included three contributions from Canada, one by Betty J. Emery and Gordon J. Garston of DBS, (measurement of Constant Dollar Aggregates in Canada), the second by D. J. Daly and D. Walters of the Economic Council of Canada, (Factors in Canada-United States Real Income Differences), the third by Dr. O. J. Firestone, University of Ottawa, (Education and Economic Development – Canadian case). Papers presented by other countries included:

1 National Product at Constant Prices in the Federal Republic of Germany, by Dr. Hildegard Bartels, Wiesbaden;

2 Real Output Measurement in the United States National Income and Product Ac-

Announcing

counts, by Lawrence Grose, U.S.;
3 An International Comparison of Methods and Measures of Sector Real Output Growth, by J. McGibbon and T.P. Hill, U.K.;
4 Calculation of National Accounts at Constant Prices in Norway, by Erik Homb, Oslo;
5 Comparison of Latin American Real Incomes, by Stanley N. Braithwaite, U.N. Economic Commission for Latin America;
6 National Accounting at Constant Prices and Constant Productivity, by R. Courbis, France;
7 The Real Output of Financial Intermediaries, by John A. Gorman; U.S.;
8 Needs for Consistency and Flexibility in Measures of Real Product by Industry, by Milton Moss, U.S.;
9 The Measurement of Quality Changes, by J. L. Nicholson, U.K.;
10 Principles in the valuation of Human Capital Stocks and Flows, by Mary Jean Bowman, U.S.;
11 Mid-Term Projection Method in Financial Flows used in the Preparation of the Fifth French Plan, by Serge Barthélémy
12 Public Sector in Financial Flow Statements: Japan's Case, by Tatsuya Samukawa.

Partly because of the large number of participants, some of the topics did not receive much useful discussion. Later on in the conference, the practise of individual authors presenting their papers and the use of appointed discussants was adopted.

The next meeting will take place in Israel in the late summer of 1969. The program includes: The Role of Prices in the National Accounting Framework; the Distribution of Income; Regional Accounting; Demographic Accounting; and Financial Flows.

Phyllis Dean of Cambridge University was named chairman of the Association to succeed R. C. Geary of the Economic Research Institute, Ireland.

Announcing . . .

In Newfoundland **Edward B. Power** has been appointed Director of Statistical Services. This is a section of the newly-formed Economics and Statistics Division of the Department of Finance. **Paul S. Craniford** has been named Assistant to the Director of Statistical Services.

Important staff changes have been announced by the Alberta Bureau of Statistics. **D. H. Sheppard** has been appointed Supervisor of Market Research. **R. E. Armit** has been named Supervisor of Labour Statistics, and **G. H. Wright** becomes supervisor of Labour Research.

Frederick J. Rashley, Director of the Merchandising and Services Division, DBS, retired in January. Mr. Rashley began service with DBS as a temporary census clerk and served for over 35 years in progressively important functions. He was appointed Director of Merchandising and Services in 1963.

Gerald Snyder has been appointed Director of the Merchandising and Services Division succeeding Mr. Rashley. Mr. Snyder was formerly Chief of the Current Statistics Section (Retail) in the Merchandising and Services Division.

Guy Labossière replaces Roy Loken as Director of Organization and Personnel Services in DBS. Mr. Loken has joined the Public Service Commission as Director of the Social-Economic Program of the Staffing Branch.

William C. MacIver has been appointed Branch Administrative Coordinator, Economic Statistics Branch. Previously Mr. MacIver was a Personnel Administrator in the Department of Transport.

Maurice A. J. Lafontaine has been named Assistant to the Director-General of the Economic Statistics Branch. Mr. Lafontaine was Head of the Industry Production Measures Unit of the National Accounts, Production & Productivity Division, and had been temporarily with the Public Service Commission as Advisor on recruitment of economists and statisticians.

Louis E. A. Lefaive, Chief of the Job Survey Section, Labour Division, DBS, will soon begin new duties as Director of Fitness and Amateur Sport, Department of National Health and Welfare.

J. Benedict Smith has joined DBS as Chief of the Consolidation and Co-ordination Section of the Governments Division. Mr. Smith was previously with the Department of Finance.

George M. McIlveen joined DBS in January as Chief of the Federal Government Section of the Governments Division. Mr. McIlveen came to DBS from the Comptroller of the Treasury.

Yves deJocas has been appointed Chief of the Census Use and Development Section of the Census Division. Previously Mr. deJocas was a Statistics Professor at the U.N.-sponsored International Centre of Statistical Training, Cameroon, Africa.

Franklin G. Boardman has been appointed Chief of the General Population Section of the Census Division. Mr. Boardman's previous position was Chief of the Vocational Training Section, Education Division, DBS.

Dr. Anatole Romaniuc has been selected as Chief of the Population Estimates and Projections Section, Census Division. Dr. Romaniuc comes from the University of Ottawa where he was an Associate Professor of Demography and Research.

Dr. Karol S. Krotki, formerly Research Assistant Director, Census Division, has accepted an appointment as Professor of Demography at the University of Alberta, Edmonton.

Ben Hazzan, former Chief of Statistics Use Development in the Information Division, has accepted an appointment as Regional Manpower Economist in the Quebec Region of the Department of Manpower and Immigration.

Dr. James Johnston has been selected as Chief of Statistics Use Development, succeeding Mr. Hazzan. Dr. Johnston will be mainly concerned with the initiation of a new DBS program for the development and extension of uses of DBS data.

Michael Issa has been named Statistics Use Development Officer for DBS in the Quebec region. Mr. Issa's address is DBS, Suite 830, 1165 Bleury Street, Montreal 1, P.Q. His previous position was Research Economist for the Ontario Department of Labour.

Rocco Graziadei has been appointed Administrative Officer, Integration and Developments Staffs, DBS. Mr. Graziadei was previously Personnel Movements Officer, R.C.A.F.

Robert N. George has been selected as Administrative Co-ordinator, Financial Statistics Branch. Previously, Mr. George was a Staff Officer with the Canadian Armed Forces.

New Reports

N.B. Labour Force Data

Wage and hours-of-work data covering most of the labour force in the Province of New Brunswick is contained in the *1966 Industrial Wage Survey* published by the New Brunswick Department of Labour. This publication represents the third industrial wage survey, which was designed to investigate, the nature of New Brunswick's wage structure.

Now a continuing annual project, the survey developed from a need to supplement wage data compiled by the Federal Department of Labour and the Dominion Bureau of Statistics because the Federal surveys cover only establishments employing fifteen or more workers. In New Brunswick this takes in only about 25 per cent of all establishments and about 50 per cent of the labour force whereas the New Brunswick study encompasses nearly half of the province's 10,338 establishments and covers 75 per cent of all the people employed in the province.

The Publication contains statistics from a sample of firms participating in the Workmen's Compensation program. One important group of tables shows average hourly wages for major industry groups by county; an appendix deals with population, labour force, wage earner ratios for the province during selected years from 1901 to 1961, and compares these ratios to Ontario and to all of Canada. A breakdown by New Brunswick counties is also shown.

The publication is available from the New Brunswick Department of Labour, Fredericton, N.B.

Special Education for Exceptional Children

Statistics of Special Education for Exceptional Children – 1966, recently published by DBS, satisfies a long apparent need for a count of exceptional children enrolled in special education programs of all kinds along with some information about their teachers.

Since the last nation-wide compilation of statistics on special education, published for 1953-54, the only additional data published by DBS was enrollments in some auxiliary and special classes in the annual "Survey of Elementary and Secondary Education", as well as the annual series on enrollment and staff in schools for the blind and the deaf.

In view of the lapse of time since the last nation-wide survey, it was felt necessary to collect as much information as possible on a somewhat exploratory basis, with an emphasis on comprehensiveness. It was hoped that a broad-brush treatment outlining the provision for all types of exceptional children – gifted, retarded readers, slow learners and educable retarded, trainable retarded, emotionally disturbed, visually or hearing handicapped – to name some of the categories covered – might serve to put into perspective the more localized and precisely defined studies of the kind that would be useful in relation to administrative action.

The resulting 103-page publication provides a wealth of information in tabular form which apart from providing a province-by-province count of children in each category of exception, provides breakdowns by type of institutions exercising control over their training, such as Provincial Department of Education-run classes, school board, church-run, and so on. Qualifications of teachers and teacher salaries are another example of the information presented. The report contains a comprehensive bibliography of books and articles related to the subject.

Further information concerning the publication can be obtained from the Chief of the Research Section, Education Division, DBS, Ottawa.

Special Labour Force Studies

Analyses of selected economic, social and demographic aspects of the working population in Canada are presented in a new series of Special Labour Force Studies published by DBS. The studies as prepared under the direction of Dr. Sylvia Ostry who is also co-authoring the labour force monograph material. The series is somewhat similar in concept to the labour force census monographs but contains a less intensive analysis. While the monographs use 1961 census data as a primary source, the Special Labour Force Studies rely mainly on supplementary questions attached to the monthly survey of the labour force and use census tabulations as a secondary source only.

The series is broken into two sub-series. The first, consisting thus far of five individual publications, is designed to reach a broad audience interested in the changing nature and composition of the Canadian labour market. The second series recognizes the fact that some aspects of manpower development require a somewhat more technical analytical approach. Thus the second series is intended as a companion series of technical papers. The first of this companion series is now available.

The complete series of Special Labour Force Studies now available are:

1 Educa*tional Attainment of the Canadian Population and Labour Force 1960-65* by Frank J. Whittingham formerly of DBS, includes estimates of the relationship between educational attainment and labour status and activity, and a comparison between native-born Canadians and post-war immigrants.

2 In *Annual Work Patterns of the Canadian Population 1964* by Frank J. Whittingham formerly of DBS and Bruce W. Wilkinson of the University of Western Ontario, the annual work experience of the Canadian population is compared with data from monthly surveys. It includes an analysis of long-duration unemployment, and part-year and part-time work.

3 *The Job Content of the Canadian Economy 1941-61* by J.G. Scoville of Harvard University has a review of the theory and measurement of job content together with an attempt to estimate the kinds of jobs in the Canadian economy by function and levels. A comparison is made with the United States.

4 *Geographic Mobility in Canada October 1964-October 1965* by May Nickson analyses the migration of the Canadian population between municipalities by age, sex, and region. For male migrants, aged 17-64, labour force status and reasons for leaving are also included.

5 *Women Who Work: Part 1* by John D. Allingham, University of Western Ontario and the Australian National University contains an evaluation of the relative importance of age, marital status, and education as factors influencing the participation of women in Canada's work force.

6 Series B - - No. 1. *The Demographic Background to Change in the Number and Composition of Female Wage Earners in Canada, 1951 to 1960* by John D. Allingham is an evaluation of demographic change over the 1951-1961 decade and its impact on the composition and number of female wage earners in 1961.

Balance of Payments

Publication by DBS of a compendium of balance of payments statistics from 1946 to 1965 has considerably facilitated the study of this major field by assembling and presenting in one convenient and comprehensive volume, revised estimates for two decades of statistics. Until now, lengthy time series and much detail were obtainable only by using the Bureau's quarterly and annual balance of payments reports (DBS Catalogue numbers 67-001 and 67-201) and monthly reports on Canada's international transactions in portfolio securities (DBS Catalogue number 67-002), many of which were out of print. The publication contains revisions and extended detail, covering period, geographical area and industry distribution with cross-references. The provisional figures for 1965 have subsequently been revised in the *Quarterly Estimates of the Canadian Balance of International Payments* for the second quarter of 1967.

(The Canadian Balance of International Payments, A Compendium of Statistics from 1946 to 1965 (235 Pages DBS Catalogue No. 67-505. Price $2.50).)

More Penetrating Analysis of Census Data

The first of a series of monographs based on 1961 census data, *Historical Estimates of the Canadian Labour Force*, is a good example of the kind of census data analysis made possible by two factors: the amount of new and more detailed information available from the 1961 census compared to previous ones, and the use of the computer to provide a greater variety of tabulations as the basis for more penetrating analytical studies.

Census information is widely used in Canada, and this publication is part of a plan to produce analytical monographs on selected topics which can be used to supplement the census statistical reports. This first study, by Frank T. Denton and Dr. Sylvia Ostry makes use of information from the 1961 as well as from previous censuses and other sources to provide new historical estimates of the labour force on a definitionally consistent basis. These estimates will be used for analysis in some of the later studies in the series.

Other monographs in the labour series, all by Dr. Ostry, will be published soon. These include: *Unemployment in Canada, Provincial Differences in Labour Force Participation*, and *Occupational Composition of the Canadian Labour Force*.

In addition to the labour monographs, others are planned on marketing, agriculture, fertility, urban development, income, immigration and internal migration. Those on which work is well advanced include: *Tendances et facteurs de la fécondité au Canada* by Jacques Henripin; *Urban Development in Canada* by L.O. Stone; *Trends in Canadian Marketing* by G. Snyder and M.S. Moyer; *Incomes of Canadians* by J.R. Podoluk.

Alberta Trade Index

The Alberta Bureau of Statistics has published, for free distribution, its 1967 edition of the *Alberta Trade Index*. This publication provides a listing of Alberta manufactured products, selected items of imports, natural gas processing plants, coal mines and quarries timber lessees and the various provincial news media.

Also published was the interim *Salary and Wage Rate Survey – 1 August, 1967*, which provided summary wage data for Alberta, Calgary and Edmonton.

Consumer Finance Reports

For the first time a Consumer Finance survey taken in the Spring of 1966 included farm families and the forthcoming report *Distribution of Incomes in Canada by Size, 1965*, (Cat. No. 13-528) will contain income distributions for all persons, families and unattached individuals residing in private households with a few minor exceptions. An appendix to the DBS report will, however, present the same tables excluding farmers and their families thus providing a link with previous income surveys that covered a more restricted population.

The main report as well as the appendix will contain two basic series of tables – income distributions for persons in receipt of income and income distributions for family units (families and unattached individuals). Percentage distributions by size of income, mean and median incomes will be published by personal or family characteristics and such variables as area of residence, major source of income, etc. On most of these characteristics historical comparisons can be made for the non-farm population going back to 1951 with the reservation that data are published on a current dollar basis and no account has been taken of changing price levels over the period of time.

The 1965 income report will contain besides the usual tables described above cross-classifications of family or individual incomes by educational attainment of the family head or person. Similar cross-tabulations will be also shown by income level and immigration status. Although the small sample size (less than 9,000 families) will not permit detailed analysis of these data, the tables will provide some indication about the income differentials between native-born Canadians, pre-II World War immigrants and more recent immigrants. These estimates as well as estimates of income differentials by educational level will be the first ones available since the 1961 Census.

The Consumer Finance Research Staff plans to publish a historical summary of the non-farm income reports for the years 1951, 1954, 1957, 1959, 1961 and 1965. This historical publication will contain a selection of tables on a constant dollar basis using the Consumer Price Index to deflate incomes to the 1961 price level. Another section of this publication will show the composition of each income quintile and historical changes in terms of the characteristics of persons and families making up the lowest income quintile, for example, can be analysed.

(Inquiries concerning these reports may be directed to the Consumer Research Finance Staff, DBS, Ottawa.)

A special feature of the report *Incomes, Assets and Indebtedness of Non-Farm Families in Canada, 1963*, published by the Consumer Finance Research Staff is an examination of ownership of publicly traded stocks by characteristics of stock-holders and the size and composition of portfolios. The report is based on an inquiry into family incomes, debts and assets, including investments in corporations and real estate owned for investment purposes. A similar survey is not planned for several years, at least not before 1970.

Earlier two surveys on incomes, debts and assets were conducted and the conclusions are contained in the report *Incomes, Liquid Assets and Indebtedness of Non-Farm Families in Canada, 1955*. A third survey, in the Spring of 1964, collected relevant data from 6,400 families and unattached individ-

uals. The survey coverage was expanded to non-liquid assets such as owner-occupied houses, real estate held for investment purposes and other financial investments. The three surveys were undertaken as part of a continuing program of surveys on Consumer Finance.

In addition DBS has published reports based on income data in publications entitled *Distribution of Non-Farm Incomes in Canada by Size* since 1951.

Manufacturing Fixed Capital Flows and Stocks

How important is the rate of capital formation in determining the level of economic activity? What are the relationships among rates of capital formation, expected levels and patterns of final demand, and the different stocks of capital which various industries hold in relation to their output? How is capital accumulation related to changes in the productivity of labour by industry?

Fixed Capital Flows and Stocks - - Manufacturing - - Canada 1926-1960, published by DBS is intended to shed light on these and other questions of interest to economic theorists and policy makers. Professor T.K. Rymes, now of Carleton University, prepared the two-volume report and refers to the over 700 pages as a modest probe by DBS into the area of capital measurement.

The volume subtitled "Methodology" presents a review of concepts, sources and methods used in estimating fixed capital flows and stocks in manufacturing, and also contains an analysis of the data obtained, as well as a partial set of estimates extracted from the companion volume subtitled "Statistical Supplement", which contains the complete presentation of tabular material. Thirteen groups of manufacturing industries are analysed in the report. The report constitutes a part of a large set of fixed capital flow and stock estimates relating to the whole Canadian economy. Figures for non-manufacturing industries are not yet suitable for publication but it is hoped to release additional estimates from time to time as they are improved.

"Fixed Capital Flows and Stocks - - Manufacturing - - Canada 1926-1960", Catalogue 13-522 Methodology; Catalogue 13-523 Statistical Supplement, can be ordered from Publications Distribution, DBS, Ottawa.

Fighting Poverty

Over 150 Federal programs are directly concerned with improving the well-being of Canadians and are therefore related to the problem of poverty. These programs cost $2.7 billion in 1966. Complimentary provincial and municipal expenditures were even higher. As well, hundreds of private and voluntary organizations, helped by private donations, are fighting poverty.

To help bring these programs together, to minimize duplication, to help in seeing that gaps are filled, and promote the sharing of experiences, creation of a Special Planning Secretariat was announced in the spring of 1965.

Fighting Poverty in 1966 is the Secretariat's first report. It is in part an abbreviated account of the work of the Special Planning Secretariat, and in part an account of anti-poverty programs being administered by the many Federal agencies. The 42-page illustrated bilingual report includes relevant statistics and expense breakdowns of the Federal program.

Fighting Poverty in 1966 – Special Planning Secretariat – August 1967 is available from the Queen's Printer under Catalogue Number CP1-1/1966.

Manufacturing Statistics And Changes in S.I.C.

"Classifications, Concepts, Confidentiality and the Use of Statistics on the Manufacturing Industries by Geographers", was the title of an article by Vincent R. Berlinguette, Director-General of the Economics Statistics Branch of DBS which appeared in the *Canadian Geographer XI*, 1, 1967. The article is concerned with three aspects of the Census of Manufactures and deals with the subject in some detail. Because of its value as a outline of the concept and historical development of DBS manufacturing statistics, it is reviewed here so that readers who are interested may obtain copies.

As the title indicates, the article deals with the subject from three standpoints:

Changes in Industrial Classifications

While it is true that we speak of three industrial classifications being used over the years for DBS manufacturing statistics, the 1960 classification now in use is essentially a revision and modernization of that of 1948 which in turn was based on the earlier classification.

Concerning the effect of classification changes on historical comparability, the fact is that the Standard Industrial Classification is being *continually* changed in small ways in the light of changing circumstances and technology, alterations in the structure of industry and the experience and evolving interests of statistics users. The 1960 revision arose from an extensive review of the impact of these various considerations on the classification, although at the same time, the really major changes were concentrated in relatively limited areas of the classification and do not affect historical comparisons as much as might first appear.

The most basic changes in the 1960 revision consisted of disaggregating three large industry groups which melded important forms of primary manufacturing activity with related forms of secondary manufacturing activity. This reflects the fact that since the Second World War, secondary forms of manufacturing have played a more important role in the economy and that discussion of public policy increasingly centers on the development of the higher stages of fabrication.

It should be borne in mind that Canadian manufacturing statistics are part of a larger international system of statistics and that industrial classifications are changed in other countries too. Failure to modernize the Canadian classification would lead to an eventual serious loss of comparability with the statistics of other countries. Comparability through space is as desirable for manufacturing statistics as comparability through time.

DBS was, of course, aware that it was creating problems of historical comparability and gave them serious consideration. With regard to such impact as the revision did actually have on historical comparability, three observations may be made: First, the majority of statistics users appear to be willing to sacrifice some historical comparability for increased quality and usefulness in the current statistics. Second, freezing the system of industrial classification would not necessarily preserve historical comparability for small geographical areas, since over the years there is a considerable incidence of change in the boundaries of some of them. Third, the recent classification changes appear as only one part of the question of historical comparability. In decades to come, further revised systems of industrial classifications will

have to reflect changes in technology, patterns of industrial development, and the interests of statistics users.

Changes in Concept

The introduction of the new establishment and total activity concepts with the annual Census of Manufactures in 1961 rested primarily on the need to improve co-ordination of the statistical system. Before 1961, emphasis was placed on manufacturing activity in the definition of reporting units and respondents were expected to relate all requested statistical categories to their manufacturing operations regardless of whether this was realistic in terms of their accounting records and mix of activities. Under the old establishment concept, manufacturers were asked to accomplish this by estimates - - estimates which in many cases were not satisfactory. Introduction of the new concept helped remedy this by making the Census of Manufactures more a survey of manufacturing establishments and less a survey of manufacturing activity.

The new establishment concept makes it possible to classify each business establishment to only one industry with no double counting or gaps - - impossible to avoid under the old system.

Confidentiality

The Dominion Bureau of Statistics is prohibited by the Statistics Act from revealing any data from an individual return without the prior written consent of the respondent. As users of statistical reports sometimes wonder about the necessity of such a provision, the article outlines the important purposes served by it. Five possible partial answers to the loss of data for sub-provincial areas resulting from operation of the confidentiality rules are advanced in the article, all consistent with the retention of full protection for individual respondents.

Copies of Mr. Berlinguette's article can be obtained from the Information Division, DBS, Ottawa.

Probable University Growth

The Office of Economic Studies on Research and Development of the National Research Council has issued the results of a study on the probable growth of graduate student enrollment and the faculty staff for the next ten years in Canadian universities and colleges. A number of tables give annual figures for the next ten years and tabulate the total student enrollment, the number of PhD's, grants and supply of faculty staff. Special attention is given to the science and engineering faculties.

The report was prepared by O.H. Levine, Chief of the Office of Economic Studies. Its purpose was to develop quantitative descriptions, covering the decade to 1975-76 of: (1) the extent of science and engineering graduate student enrollment (2) the relationship of this enrollment to the enrollment of graduate students in other disciplines and (3) the linking of graduate student enrollment to faculty requirements.

Under the title of Graduate Students and Faculty Resources at Canadian Universities and Colleges, 1967, the publication is obtainable on request from the Publications Office of the National Research Council.

Census Recommendations Published by U.N.

Principles and Recommendations for the 1970 Population Censuses published by the Statistical Office of the United Nations is a document designed to improve census operations to be carried out by various countries around 1970, to improve the value of the compiled census results for national purposes and also to increase international comparability.

The Principles and Recommendations are set forth in six parts and an annex. Part I deals with the definition, essential features and uses of a population census. Part II consists of statements of widely recognized principles of efficient census planning and administration.

These principles of census management are based on detailed studies of successful census procedure and on a synthesis of expert opinion. They are stated in concise terms for the consideration and use of countries as an aid in improving the efficiency, economy and quality of national census operations. Part III is a brief exposition of the role of sampling in the various phases of a population census. Part IV deals with the unit and place of enumeration. Parts V and VI contain specific recommendations regarding census topics, definitions, classifications and tabulations. Recommendations are based primarily on the experience of countries with their 1960 censuses.

The book sells for $2.50 U.S. Currency and carries United Nations Publication sales No. 67.XVII.3.

Survey of U.S. Automobile Travellers in Canada

Arising from a recommendation of the 1967 Federal-Provincial Conference, on Economic Statistics held at L'Esterel, Quebec, the Canadian Government Travel Bureau and DBS jointly entered into an agreement with a private agency to conduct an exit-interview survey of foreign visitors travelling by automobile in the summer of 1967. Included in this agreement were clauses giving responsibility for the methodology of this survey. The Sampling and Survey Research Staff designed the survey, chose the sample of interview locations, and specified the estimator. The major part of the costs have been borne by the Canadian Government Travel Bureau and DBS, and contributions were made by the Nova Scotia Department of Trade and Industry and the Ontario Department of Tourism and Information.

The results of the survey are now being evaluated.

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