

CATALOGUE No.

**61-505**

OCCASIONAL

61-505

c.3



STATISTIQUE STATISTIQUE  
CANADA CANADA

OCT 6 2009

LIBRARY  
BIBLIOTHÈQUE

INDEXES OF REAL DOMESTIC PRODUCT  
BY INDUSTRY OF ORIGIN

1935-61

35-69  
61-69

**DOMINION BUREAU OF STATISTICS**

National Accounts and Balance of Payments Division

Industrial Output Section



DOMINION BUREAU OF STATISTICS  
National Accounts and Balance of Payments Division  
Industrial Output Section

INDEXES OF REAL DOMESTIC PRODUCT  
BY INDUSTRY OF ORIGIN  
1935-61

*Published by Authority of*  
The Minister of Trade and Commerce

May 1963  
2205-504

Price \$1.50



## FOREWORD

With this reference document the Dominion Bureau of Statistics presents a new set of historical data for those concerned with economic statistics. Those business and market analysts, economists, statisticians, and others who have made use of the Index of Industrial Production will recognize the benefits to be derived through extending that measure of real product, on both a seasonally adjusted and unadjusted basis, to encompass all industries within the economy. By so doing, quantity of output changes in one industry, or in several industries, may be analyzed within the historical framework of aggregate production. The Index of Industrial Production, which covers manufacturing, mining, electric power and gas utilities (or about one-third of the domestic economy's output) has long been considered one of the most important indicators of economic activity that is coincident with the business cycle. With substantial changes occurring in the economy's structure it has become increasingly evident that a broader setting for the Index would be beneficial. The area covered by the Index of Industrial Production is a most significant one but the importance of production levels in other industry areas should not be overlooked. This latter point is particularly noteworthy in relation to recent cyclical downturns where sustained activity in the service industries helped to bolster the economy. Again, the very pronounced shifts in the labour force to the service-producing industries over the past decade illustrates the importance of keeping abreast of movements in the output of individual industries as well as in total output.

The industry indexes presented herein may also be viewed as representing an extension of the system of national accounts now published by the Dominion Bureau of Statistics. The National Accounts include current dollar estimates of Gross National Product (G.N.P.) and Expenditure on Gross National Product, (the latter aggregate is usually called Gross National Expenditure or simply G.N.E.). The G.N.E. data are deflated to yield constant dollar values for total final expenditure and its categories. These aggregate studies do not provide a constant dollar or quantity breakdown of the product side of the National Accounts into its industrial components.

The Gross Domestic Product at factor cost indexes presented in this study are quantity measures, expressed in index form, of the unduplicated production of individual industries (and the domestic economy when summed) valued in terms of the prices of a base period. The term unduplicated is used here since duplication arising from counting goods or services consumed in more advanced stages of fabrication is eliminated. Instead such intermediate inputs are deducted from the duplicated production of each industry to yield a value added total. As explained later in this report such a value added total cannot be directly deflated. Instead the value of each industry's duplicated output must be deflated first and then the separately deflated intermediate input value deducted to arrive at a deflated value added series. This technique is commonly referred to as the double deflation approach and is the basic technique used in this study.

In a sense, therefore, the industry of origin approach to an aggregate production quantity measurement helps to round out the present system of national accounts and, at the same time, provides a largely independent check on the national accounts value and constant dollar series. Indeed it was a desire to check the quarterly deflated G.N.E. results that first led to basic research into, and development of, the industry "real output" estimates.

The industry production indexes, once developed on a preliminary basis, were soon found to be quite useful for general economic analysis and subsequently the decision was taken to improve them to the point where they could be made available in published form. It is realized that the industry indexes are imperfect in many respects, especially because of data deficiencies. However, it is only through constructive criticism along with research and development that the full potential of these indexes can be realized.

The Domestic Product by industry of origin indexes contained in this report are on an annual basis back to 1935 and on a quarterly (seasonally adjusted and unadjusted) basis from 1946 to 1961 inclusive.

The text has been divided into a number of parts for easier handling. Part I presents an historical note as well as some uses and limitations of the data. Part II, an analysis, illustrates some of these uses. Part III covers the conceptual framework of the indexes while Part IV is concerned with the methodology employed. Part V concentrates on problem areas which seem to be particularly bountiful in a project such as this. Technical appendices present detailed descriptions of the industry indexes shown in Part VI, as well as a selected bibliography and a study of the difficulties encountered in attempting to reconcile with the deflated G.N.E. aggregate.

Because of the broad scope of the estimates it is most difficult to give credit to all those people who have helped in some way or another. The study itself was prepared under the direction of Gordon J. Garston, Chief of the Industrial Output Section, National Accounts and Balance of Payments Division. In addition to the staff of this Section, who contributed so much to the real output project, Miss B. Emery of the National Product Section assisted by preparing Appendix D while Mr. L. Tessier of the Drafting Unit prepared the charts. Assistance was also received from the Central Research and Development staff as well as from other DBS Divisions. Considerable encouragement was given throughout the developmental phase of this work by officials concerned with economic analysis in other government departments and agencies such as the Bank of Canada and the Departments of Trade and Commerce, Finance and Labour. Finally, we would like to acknowledge the help and advice given by officials of the Board of Governors of the Federal Reserve System and of the Departments of Commerce and Labour in Washington, D.C. To all of these and the many others who have helped, a debt of gratitude is owed.

### **SYMBOLS**

The interpretation of the symbols used in the tables throughout this publication is as follows:

.. figures not available.

— nil or zero.

-- amount too small to be expressed.

n.e.c. not elsewhere classified.

# TABLE OF CONTENTS

## PART I

### Introduction

	Page
Historical Note .....	11
Relation of the Industry of Origin Indexes to the Index of Industrial Production .....	12
Relation of the Industry of Origin Indexes to the Industrial Distribution of Gross Domestic Product at Factor Cost in Current Dollars .....	13
Regional Studies .....	13
Some Uses of the Industry of Origin Indexes .....	13
Current Analysis .....	13
Historical Records .....	13
Check on Deflated Gross National Expenditure .....	13
Productivity Ratios .....	14
Statistical Integration .....	14
Structural Analysis .....	14

## PART II

### An Analysis of Real Domestic Product

Long-term Trends and Industry Growth Rates .....	17
Economic Fluctuations, 1946 - 61 .....	26

## PART III

### Conceptual Framework of Estimates of Real Domestic Product by Industry of Origin

The Concept of Production .....	35
Boundaries of Production .....	38
Index Numbers and the Industry of Origin Estimates .....	39
Interpretation of the Concept of Production at the Industry Level .....	40
Quality Changes .....	41
Financial Intermediaries .....	42
Government Administration and Non-commercial Establishments .....	42
Paid and Imputed Rents Received by Persons and Imputed Rents on Government Buildings....	43

## PART IV

### Methods Used in Preparing the Industry Indexes

Introductory Note .....	47
Formulae Used .....	47
Base Periods .....	49
Industry Weights .....	51
Annual or Bench-mark Indexes .....	52
Monthly or Quarterly Indexes .....	53
Adjustment for Calendar Variation .....	53
Adjustment to Labour Input Data .....	54
Adjustment of Current Indexes to Bench-mark Levels .....	55
Adjustment for Seasonal Variation .....	56

## TABLE OF CONTENTS – Continued

### PART V

#### Some Problem Areas and Future Development

	Page
Data Problems .....	61
Production Indicators for Financial Intermediaries .....	62
Production Indicators for Non-commercial Establishments .....	63
Rebasing Problems .....	63
Industry Classification .....	64
Future Development .....	64

### PART VI

#### Statistical Tables

##### Table

1. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61, 1949 = 100 .....	67
2. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61, 1949 = 100 .....	71
3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61, 1949 = 100 (Unadjusted and Adjusted for Seasonal Variation) .....	73
4. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61, 1949 = 100 (Unadjusted and Adjusted for Seasonal Variation) .....	92
5. Industry Weights, 1949 and 1935-39 .....	94
6. Comparison of Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, with Constant Dollar Expenditure on Gross National and on Gross Domestic Product at Market Prices, by Years, 1935-61, 1949 = 100 .....	96
7. Quantity or Constant Dollar Index Comparison of Gross Domestic Product at Factor Cost, by Industry of Origin with Expenditure on Gross National Product and on Gross Domestic Product at Market Prices, 1947-61 (Seasonally Adjusted Quarterly Indexes, 1949 = 100) .....	96
8. Industry Composition of Employed Labour Force in Canada, 1946-61 .....	97

### CHARTS

##### Chart

1. Comparison of Real Gross Domestic Product with the Index of Industrial Production by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	12
2. Gross Domestic Product at Factor Cost, 1935-61, Quantity Index, 1949 = 100 .....	17
3. Percentage Change (year-over-year) in Real Gross Domestic Product at Factor Cost, 1936-61.	
Contributions to the Percentage Change, by Six Major Industry Groups, 1936-61 .....	18
4. Index of Per Capita Real Gross Domestic Product at Factor Cost, 1935-61, 1949 = 100 .....	19
5. Quantity Indexes of Agriculture compared with Total Goods-producing Industries, 1935-61, 1949 = 100 .....	20
6. Quantity Indexes of Manufacturing, 1935-61, 1949 = 100 .....	22
7. Quantity Indexes in Other Goods-producing Industries, 1935-61, 1949 = 100 .....	22
8. Quantity Indexes of Goods- and Service-producing Industries, 1935-61, 1949 = 100 .....	23
9. Quantity Indexes in Service-producing Industries, 1935-61, 1949 = 100 .....	23
10. Grocery and Combination Retail Stores, 1935-61, Quantity Indexes, 1949 = 100 .....	24

**TABLE OF CONTENTS – Continued**

**CHARTS – Concluded**

Chart	Page
11. Selected Manufacturing Industries, Quantity Indexes, 1935-61, 1949 = 100 .....	25
12. Non-durable Manufacturing Compared with Selected Components, 1935-61, Quantity Indexes, 1949 = 100 .....	25
13. Comparison of Current Value and Quantity Indexes of Gross Domestic Product at Factor Cost, 1935-61, 1949 = 100 .....	25
14. Gross Domestic Product at Factor Cost by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	26
15. Comparison of Commercial and Non-commercial Groups, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	27
16. Goods-and Service-producing Industries, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	27
17. Selected Goods-producing Industries, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	28
18. Durable and Non-durable Manufacturing by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	29
19. Goods-producing Industries, Selected Groupings by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	29
20. Service-producing Industries, Selected Groupings, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	30
21. Comparison of Manufacturing with Related Service-producing Industries, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	30
22. Comparison of Wholesale and Retail Trade, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	30
23. Comparison of Motor Vehicle Industry and Primary Iron and Steel Industry, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	31
24. Recent Cyclical Peaks and Troughs as Shown in Real Gross Domestic Product .....	31
25. Comparison of Smoothing Techniques .....	56
26. Gross Domestic Product at Factor Cost, by Quarters, 1946-61, Quantity Indexes, 1949 = 100 .....	72
27. Goods-producing Industries, by Quarters, 1946-61, Quantity Indexes, 1949 = 100 .....	72
28. Service-producing Industries, by Quarters, 1946-61, Quantity Indexes, 1949 = 100 .....	72
29. Transportation, Storage and Communication, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	83
30. Transportation, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	84
31. Wholesale Trade, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	87
32. Retail Trade, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	88
33. Retail Trade, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	89
34. Selected Service-producing Industries, by Quarters, 1946-61, Seasonally Adjusted Quantity Indexes, 1949 = 100 .....	90

**APPENDICES**

Appendix	
A. Select Bibliography .....	101
B. Description of Annual or Bench-mark Indexes .....	105
C. Description of Quarterly Indexes .....	127
D. Problems in the Reconciliation of Real Gross Domestic Product at Factor Cost with Constant Dollar Expenditure on Gross National Product at Market Prices .....	135

**TABLE OF CONTENTS – Concluded**

**INDUSTRY REFERENCES**

	Page
Alphabetical Industry Listing .....	145

**ADDENDUM**

Indexes of Real Domestic Product by Industry of Origin, by Quarters, 1962 .....	155
---	-----

PART I

INTRODUCTION



## PART I

### INTRODUCTION

#### Historical Note

In recent years an increasing amount of attention<sup>1</sup> has been devoted to measures of real product and expenditure on real product. This interest has its roots in a number of areas including business cycle analysis, price, employment and productivity studies, economic model building and economic growth.

The present document is an outgrowth of this interest and extends the industry data that have already been made available to users of Canadian economic statistics. Of the data already made available two major sources are particularly relevant. The first is the *Revised Index of Industrial Production*<sup>2</sup> published in 1952 in reference paper form on a 1935-39 base and revised in 1959 to incorporate a 1949 weight base as well as other changes. The second major source is the deflated expenditure on Gross National Product<sup>3</sup> first published in 1952 on an annual basis and later placed on a quarterly basis.<sup>4</sup> Early in 1961 the deflated G.N.E. data were recomputed on a 1957 weight base and published on a seasonally adjusted basis.<sup>5</sup>

Real Domestic Product<sup>6</sup> by industry of origin estimates represent a relatively recent addition to the store of economic statistics being developed in Canada and throughout the world. At the present time therefore there is only a limited amount of practical experience and conceptual guidance available in this general area. Some conceptual problems remain unsolved at the individual industry level and data problems are formidable in certain areas. The present publication should, therefore, be viewed as a document which aims to introduce these quantity data, thus permitting an appraisal of results by others.

The development of Real Domestic Product estimates by industry of origin was commenced in the Dominion Bureau of Statistics in 1952. At that time, work on the 1935-39 based major revision to the Index of Industrial Production was nearing com-

pletion. At the same time the historical annual revision document for the National Accounts was in process of publication. With this latter work the G.N.E. estimates in base year dollars were released. Internally at DBS progress was being made in the preparation of quarterly estimates for deflated G.N.E. and some check on the validity of these was being sought. As a result of all these factors the so-called "Real Output Project" was undertaken.

In the early summer of 1953 the first preliminary table, providing volume of output quarterly indexes on a 1949 base and covering all industries of the economy for the period from 1949 to the first quarter of 1953 inclusive, was circulated for internal use. These indexes were constructed in such a way as to approximate the concept of Gross Domestic Product at factor cost by industry of origin and were expressed in index form. This was in contrast to the deflated G.N.E. series which was a measure of expenditure on real Gross National Product at market prices derived by summing final expenditure categories prepared in constant dollar terms. When the industry results became available it was found that they substantiated the deflated G.N.E. estimates, thus providing increased confidence in the results of both approaches. Subsequently, the industry indexes were prepared each quarter in conjunction with the quarterly National Accounts. Although initially used merely as a check on the deflated G.N.E. estimates, the industry indexes were soon found to be useful in their own right. During the period 1953-59 it was not possible to do much of the basic research and developmental work required for preparing the figures for publication since most resources were being used in the rebasing of the Index of Industrial Production to a 1949 time and weight base. The quarterly estimates of G.D.P. by industry of origin, as originally developed, were kept current and some refinements made. However, it was not until the latest major revision to the Index of Industrial Production was published in 1959, that a concentrated effort on the broader estimates became possible.

At the outset of the industry work it was decided that the indexes should be prepared on a domestic product basis. The Index of Industrial Production had covered manufacturing, mining, electric power and gas utilities only; it did not measure production in forestry, fishing and trapping, construction, agriculture, transportation, storage and communication, finance, insurance, real estate, wholesale and retail trade, public administration and defence, community, business, recreation and personal service industries. The official Index covered approximately one-third of the domestic product and although these industries were among the most cyclically sensitive

<sup>1</sup> See bibliography.

<sup>2</sup> *Revised Index of Industrial Production, 1935-1951* (DBS reference paper 34); and *Revised Index of Industrial Production, 1935-1957*, (DBS Catalogue No. 61-502).

<sup>3</sup> *National Accounts, Income and Expenditure, 1926-1950 and 1926-1956* (DBS Catalogue No. 13-502).

<sup>4</sup> *National Accounts, Income and Expenditure, by Quarters, 1947-1957 and 1947-1961* (DBS Catalogue No.'s 13-511 and 13-519).

<sup>5</sup> *National Accounts Income and Expenditure, First Quarter, 1961*, (DBS Catalogue No. 13-501).

<sup>6</sup> The term "real" as well as the terms volume and quantity, are used throughout this report to mean the same thing,—namely a revaluation of current period quantities at base period prices. For a more complete definition see Part III, Page 35, paragraph 1.

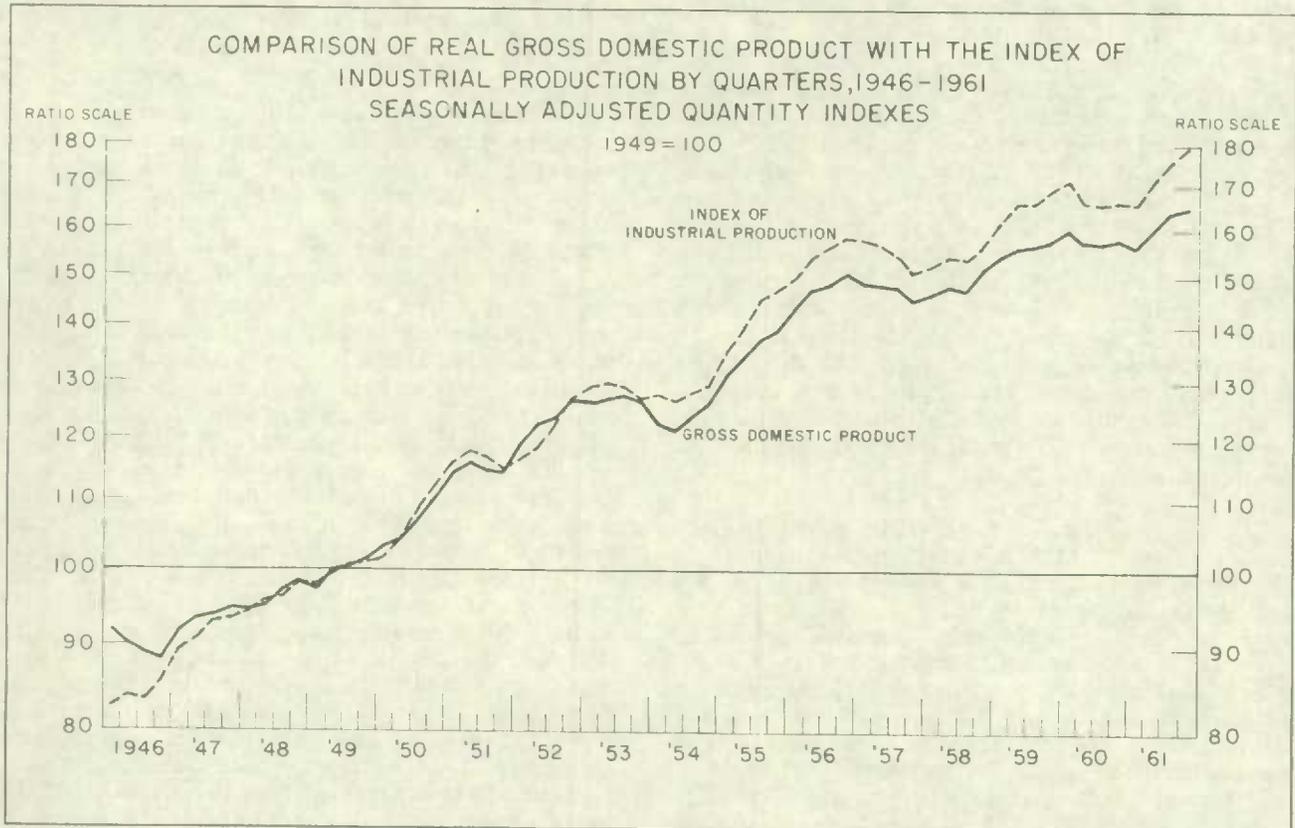
there was a growing danger that their importance might be over-emphasized unless put in the context of other industries which have grown more in recent years and are typically less sensitive over the cycle.

It was also decided at this time to follow the Standard Industrial Classification system prepared in the Bureau and published in 1948. It has not been possible in this preliminary study to adopt the

industry classification recently completed.<sup>7</sup> Full implementation of this revised classification will have to await a rebasing of the entire industry real output system.

<sup>7</sup> *Standard Industrial Classification Manual*, December 1960, DBS Catalogue No. 12-501; the previous manual, which was closely followed in this study is entitled *Standard Industrial Classification Manual*, 1948.

CHART - 1



#### Relation of the Industry of Origin Indexes to the Index of Industrial Production

The Gross Domestic Product (G.D.P.) at factor cost quantity indexes incorporate the Index of Industrial Production component industry indexes without modification. These latter indexes thus form an integral part of the industry of origin real output estimates. In the case of the quarterly tables, the indexes are simple arithmetic averages of the monthly data.

An official Index of Industrial Production has been published by the Dominion Bureau of Statistics beginning with January, 1926 and extending back to January 1919. This Index has been published on a monthly and continuing basis ever since and has undergone a number of major revisions with the latest one occurring in 1959. This latest revision included a rebasing of the Index to a 1949 weight and reference base from a 1935-39 base. It also incorporated revisions to the historical record back to the year 1935 and presented continuous industry

indexes by linking the 1935-39 and the 1949-based indexes in the year 1946. The 1949-weight-based indexes were carried back to 1946 only while all earlier years had been computed using a 1935-39 weight-base period. This same procedure of linking and the same base periods have been used in the aggregate real output measures. The indexes were linked in 1946 for consistency with these previously published indexes. The Index of Industrial Production revisions also incorporated the conceptually desirable measurement technique which has been referred to earlier as the double deflation technique for purposes of preparing annual or bench-mark levels. In the revisions to the Index the concept of economic production or value added at the industry level was kept clearly in mind and both annual and monthly data were selected and used to best approximate the desired concept. Besides the selection of projectors in line with this desired concept, the weights used for combining industry indexes were based on Gross Domestic Product at factor cost originating by industry in the base periods of 1949 and 1935-39.

### Relation of the Industry of Origin Indexes to the Industrial Distribution of Gross Domestic Product at Factor Cost in Current Dollars

The industry of origin indexes, although measuring Gross Domestic Product at factor cost as defined for national accounting purposes are not entirely comparable with the current dollar Gross Domestic Product at factor cost industry estimates available from the *National Accounts, Income and Expenditure* publications. The basic reason for this lies in the fact that the national accounts' current dollar data are a mixture of company and establishment data. Where a company has several establishments classified, according to the Standard Industrial Classification, to a number of different industries, it is classified **in total** to the industry in which its major activity occurs for purposes of the industrial distribution of the National Accounts. In the industry of origin volume indexes, this company would be broken down into its component establishments and each of these would be classified according to major activity into those mining, manufacturing, trade or other industries in which it operates.

### Regional Studies

The industry of origin indexes have not been prepared on a regional basis. All of the work has been done on a total Canada basis only. The very large mass of data that had to be processed in order to obtain industry of origin indexes for all industries in the economy, and the resources required to accomplish this, have made it impossible to consider the development of any regional breakdowns. However, even if resources were available, it would still be statistically difficult, if not impossible, to obtain regional indexes for all industries. Many companies and even some establishments have operations that extend over regional boundaries and any allocation of their revenues and expenses among the regions affected would have to be arbitrary.

### Some Uses of the Industry of Origin Real Gross Domestic Product at Factor Cost Indexes<sup>8</sup>

**Current Analysis.**—The industry of origin indexes have been used for several years on an internal and experimental basis for purposes of economic analyses. They have permitted an analysis of differing industry rates of growth and have provided some explanation for economic occurrences such as price changes, inventory cycles and labour shortages or surpluses. The data circulated on an internal basis have been in the form of quarterly indexes. These indexes, prepared on a seasonally adjusted basis, have facilitated the analysis of emerging economic conditions. Shifts in production between industries or between industry groups such as goods and services<sup>9</sup> are isolated in quantity terms, thus making it possible to analyze aggregate production movements that are free of price change. Previously available quantity data were either incomplete, (as

in the case of the Index of Industrial Production) or were based on final expenditure categories and valued at market prices, (as in the case of the deflated G.N.E. estimates).

In using the industry of origin indexes for purposes of current analyses, the users are cautioned against assuming that all the indexes are of equal reliability. A study of the industry sources, methods, data used, etc., (Appendices B and C, Description of Industry Indexes) will clearly indicate that some indexes are of uncertain quality. Fortunately these very weak indexes account for only a small percentage of total output, and therefore their effect on the broader industry aggregates is relatively small. It is felt that in spite of the defects of certain industry indexes the results provide a useful and reliable addition to presently available historical records of economic phenomena.

**Historical Records.**—Annual or bench-mark production indexes have been prepared for all industries back to 1935 and thus provide a considerable amount of historical detail which can be useful for both historical analyses and projection purposes. Quantity indexes spanning such a long period of time are, of course, subject to a number of influences that may cause biases. It is believed however that the present indexes are reasonably free of significant bias. The use of the data for projection purposes can be questioned but projections are often necessary and historical industry indexes provide additional background data to economists and business analysts who wish to make such projections.<sup>10</sup>

**Check on Deflated Gross National Expenditure.**—Over the past several years, comparisons between the deflated G.N.E. and industry of origin aggregates have shown that, in spite of certain statistical and conceptual differences, the two estimates generally move in the same direction and at approximately the same rate of change, (see Table 7, Part VI). During this time the industry indexes were, to a large extent, preliminary and experimental. They were on a factor cost concept basis, while the deflated G.N.E. aggregate reflected market price weighting. In comparing the two aggregates,<sup>11</sup> an adjustment is made to the deflated G.N.E. to place it on a domestic basis. An alternative would be to adjust the industry aggregate to a national basis but this approach is not used in this study.

Tests have been made which attempted to place the industry of origin results on a market price basis for comparison purposes.<sup>12</sup> These tests used

<sup>10</sup> One example of such a use being made of industry indexes was the projection of production to 1980 by the staff of the Royal Commission on Canada's Economic Prospects (Chapter V, Appendix E. *Output, Labour and Capital in the Canadian Economy* by Wm. C. Hood and Anthony Scott).

<sup>11</sup> See Appendix D for such a description and comparison of the two aggregates.

<sup>12</sup> "The Estimation of Real Domestic Product by Final Expenditure Categories and by Industry of Origin in Canada", by V.R. Berlinguette and F.H. Leacy. See pages 214-216 of Vol. 25, *Studies in Income and Wealth*, National Bureau of Economic Research, 1961.

<sup>8</sup> Some of these uses are illustrated in Part II of this report.

<sup>9</sup> For industry classification between goods and services see Table 1.

an industry allocation of "indirect taxes less subsidies" for the base year, 1949. The worksheets of the inter-industry flow table prepared for the year 1949 provided some information concerning initial incidence of indirect taxes. These worksheets were used to obtain an industry breakdown of indirect taxes less subsidies corresponding with the industry detail in the G.D.P. at factor cost weight tables. The industry indexes used in these tests were not revised to reflect the effect of indirect taxes less subsidies on individual products and processes within each industry. Instead, the industry indexes were simply re-weighted using the G.D.P. at market price weights. These results, when compared with the factor cost results, showed only marginal differences, and indicated that differences due to the effect of indirect taxes less subsidies were generally very small, although effects on certain industry groups such as foods and beverages in manufacturing could be substantial.

The problem of assigning indirect taxes to industry of origin is a difficult one and any such assignment must be arbitrary to a considerable extent. This is due to the manner in which taxes are applied in Canada and to a general lack of detailed tax data. An easier approach to the problem of comparisons between the expenditure at market price and industry output at factor cost production aggregates, is to remove all indirect taxes less subsidies from the deflated G.N.E. series. Such an experimental test has been made and the results, along with the method used and the problems encountered, are discussed in considerable detail in Appendix D.

**Productivity Ratios.**—The industry of origin G.D.P. indexes lend themselves to the development of productivity ratios but the user of this report is cautioned against deriving such ratios. In preparing productivity ratios, great care must be exercised to ensure the comparability between output and input measures and this matching work necessitates in most cases the use of unpublished data. Slight errors in classification can cause resultant ratios to be meaningless. Even without classification problems, slight errors in the output indexes or in the labour or other input series would cause errors in the resultant ratios which could exceed the actual productivity changes.

Work is presently under way within DBS toward the preparation of productivity estimates. The output measures will have to be thoroughly reviewed in order to ensure consistency of classification and coverage with the corresponding input data as well as to ensure that they are conceptually suitable and sufficiently reliable for purposes of productivity analyses. In certain areas of services such as business and personal services, the output measures are clearly deficient and will need considerable improvement before they can be used in any productivity analysis. Again, other industry areas such as finance, insurance and real estate will require conceptual clarification and extensive additional data.

Finally, it should be pointed out that the productivity studies will for the present be confined to the business sector of the economy. As pointed out in Part III of this paper, production in the non-business sector is indeterminate and primary input measures are used. Thus, by definition, these latter industries are assumed to have a productivity ratio of unity.

**Statistical Integration.**—The industry of origin estimates have played a major role in the task of integrating the large mass of economic statistics available within the Dominion Bureau of Statistics. The industry estimates, being based on the concept of economic production and being derived by the double deflation approach, require relatively complete and accurate output and input data. As a result of these requirements, and the necessity to cover all industries, the need for consistent output and input data as well as certain related data (such as price and wage-rate data), becomes apparent. In attempting to measure the output of individual industries certain basic data are essential and those industries having data inconsistencies, data incompleteness or a complete lack of data, become distressingly evident. In addition, various industries such as banking, television broadcasting and advertising, although measurable in value terms, present severe problems of quantity and price measurement. In these cases research must be initiated to clarify the industry's production processes. As a result available statistics are subjected to very detailed scrutiny. Flaws in them can be evaluated in terms of their relative importance within the industry framework; thus, not only can shortcomings in the statistics be isolated, but they can also be appraised and priorities assigned for their eventual improvement.

In addition to the effects of the industry work on individual industry statistics, the fact that the industry quantity indexes are an integral part of the national accounting system, and can be used in conjunction with other aggregative studies such as inter-industry flow tables and labour income and productivity, also permits a wide range of economic analyses and data comparisons. These comparisons again help to isolate and point up inconsistencies which can be caused by either conceptual or statistical differences. This use of the industry results will become a more powerful device for statistical integration in the future when the present indicators are reviewed and attempts to improve their statistical quality are made.

**Structural Analysis.**—Although the industry indexes provide the necessary information to study production shifts and movements in base year dollar or quantity terms, they cannot be used in isolation to analyze the reasons why shifts occur. In order to do this, it is necessary to introduce other relevant data, such as price change for the individual industries.

PART II

AN ANALYSIS OF REAL DOMESTIC PRODUCT



## PART II

### An Analysis of Real Domestic Product

**Note:** The following analysis is an illustration of some of the uses noted in Part I and consists of two parts: firstly, a section centring on long-term trends and the growth rates of the various industries as shown in the annual data for 1935-61 and, secondly, a section dealing with short-term changes in the period following World War II, as indicated by the quarterly data available from 1946.

#### Long Term Trends and Industry Growth Rates

Over the course of the past three decades the world has undergone profound economic changes. One need only recall some of the most dramatic and far-reaching of these: the depression of the thirties and the subsequent slow recovery; the unprecedented upheaval of the Second World War; the emergence of new national and international spheres of influence in the post-war era – both on the political and economic fronts; the ever-present social flux with its attendant changes in the mode of living; and the striking advances in the fields of science and technology – two forces which are themselves among the greatest contributors to change.

Canada has not escaped these influences. Insofar as it has an open economy, sensitive to changes in world economic climate and affected in many ways by the powerful and technologically advanced economy of the United States, Canada may be said to be particularly susceptible to them. It is against this background that Canadian economic development during the twenty-seven year period from 1935-61 should be viewed.

During this period real domestic product<sup>13</sup> more than tripled, growing at an average annual compound rate of 4.5 per cent. This growth in production was the result of the combined pressures brought to bear upon the various goods-and service-producing industries within the economy by the interrelated changes in demand (both domestic and foreign), technology, capital formation, marketing techniques and the labour force.

The domestic market had expanded considerably during this period, especially in the fifties when immigration and net family formation reached a post-war peak. The population of Canada increased from 10,845,000 in 1935, through 13,712,000 in 1950, to 18,238,000 in 1961, at an average annual rate of 2.1 per cent.

<sup>13</sup> More precisely, Real Gross Domestic Product at factor cost. The G.D.P. indexes presented in this study are quantity measures of the unduplicated production of individual industries (and of the domestic economy when summed) valued in terms of the prices of a base period. See Part III of this study for a more complete description.

CHART-2

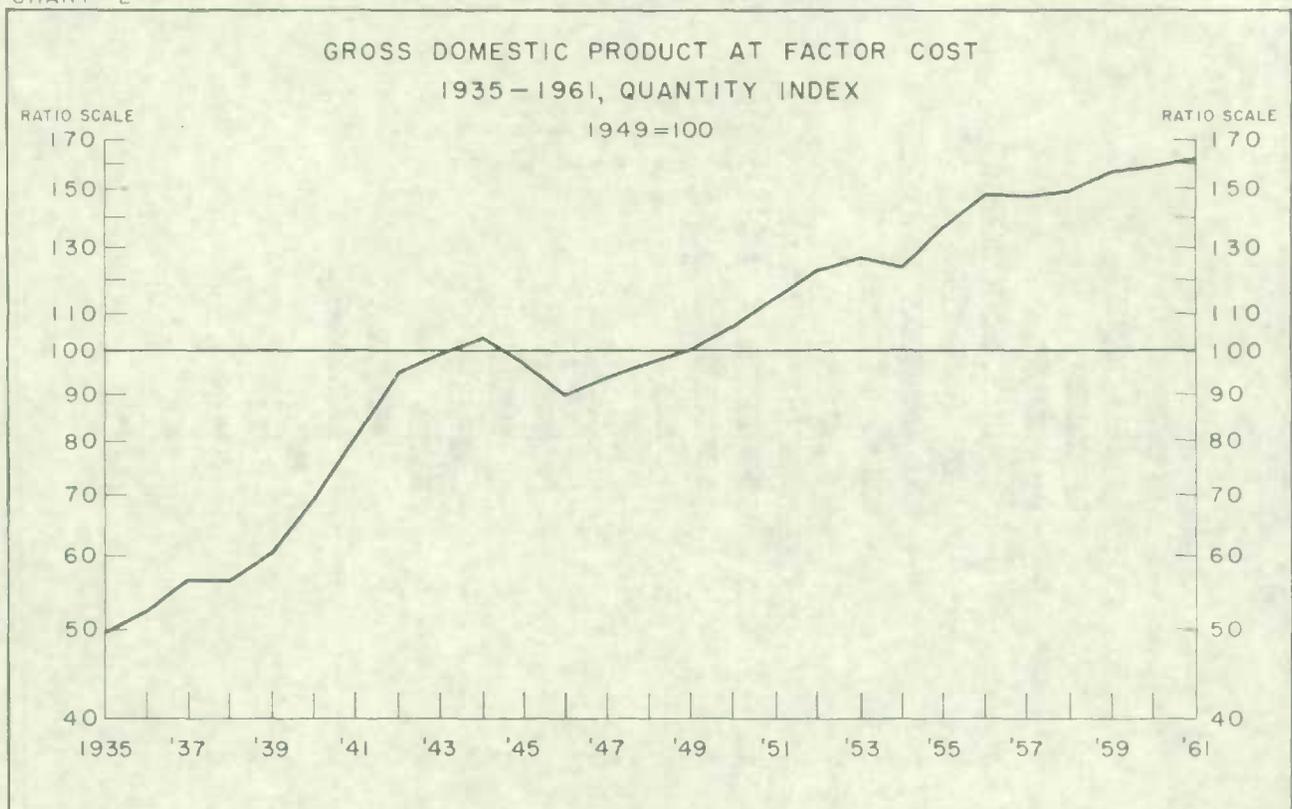
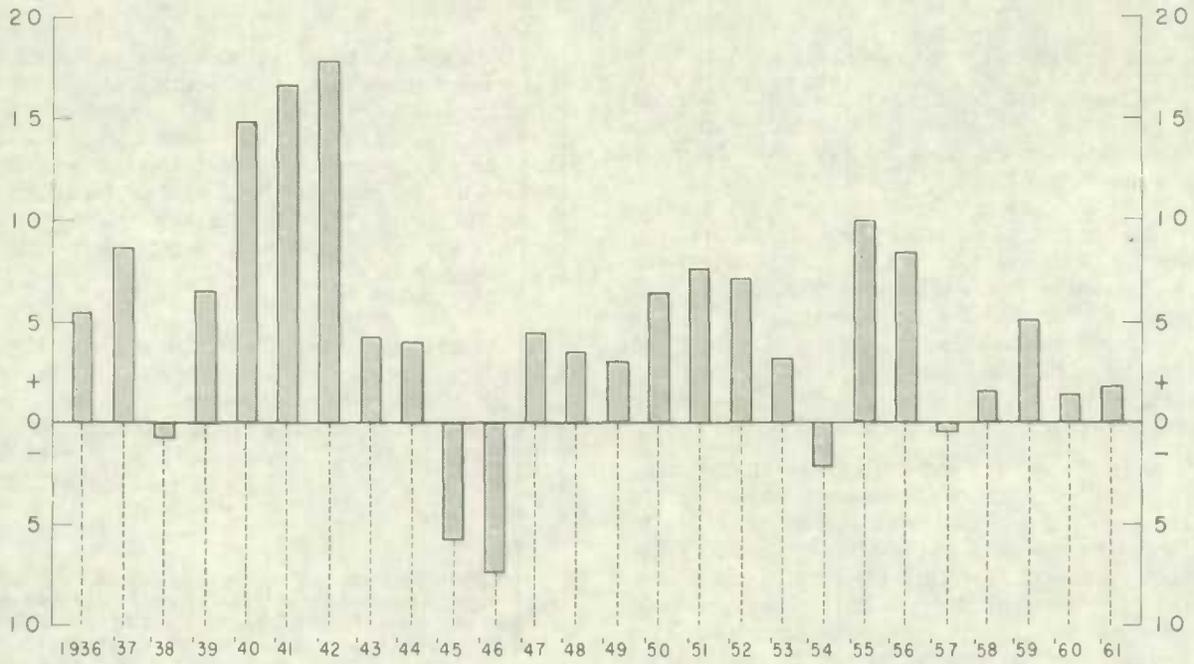
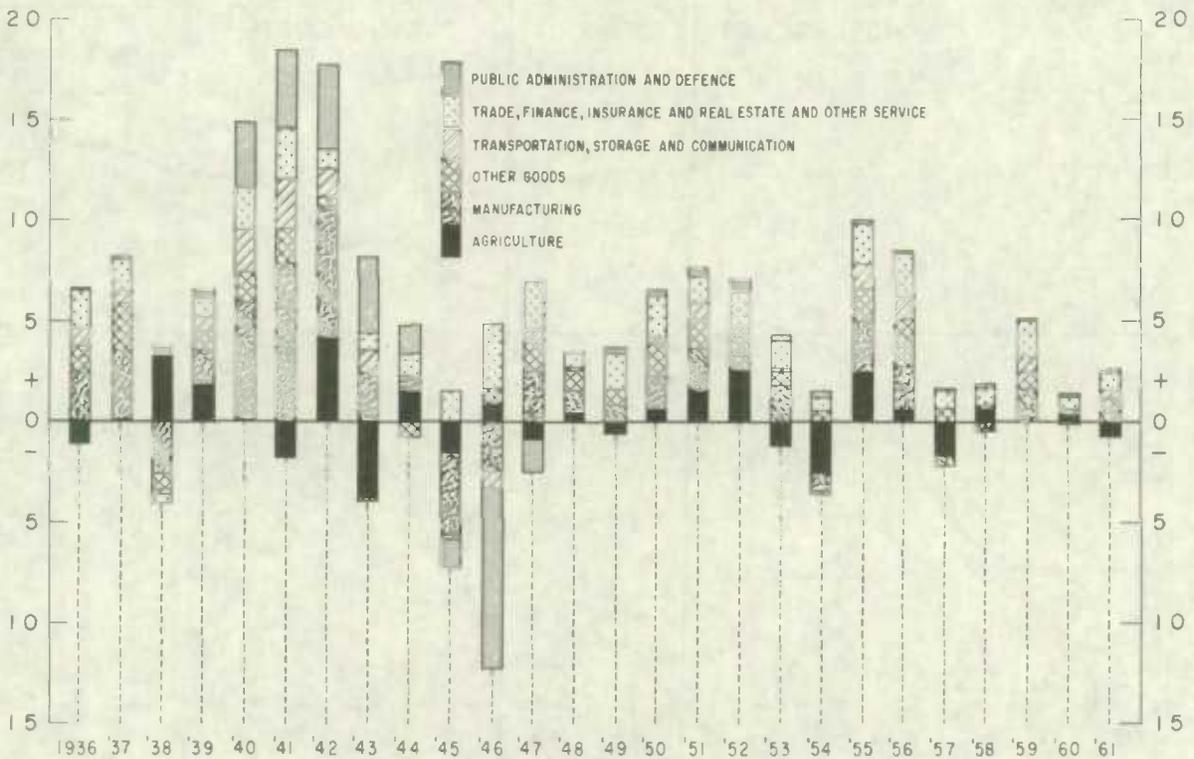


CHART-3

PERCENTAGE CHANGE (YEAR-OVER-YEAR) IN REAL GROSS DOMESTIC PRODUCT  
AT FACTOR COST, 1936-1961



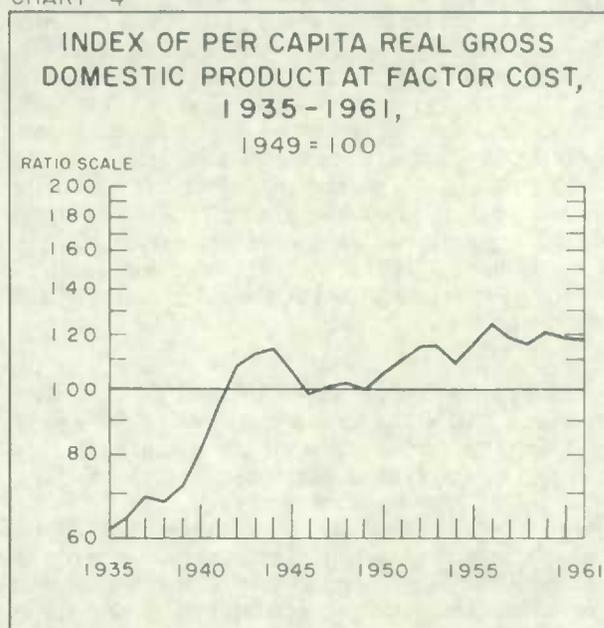
CONTRIBUTIONS TO THE PERCENTAGE CHANGE, BY SIX MAJOR  
INDUSTRY GROUPS, 1936-1961



The tremendous expansion in productive activity following the outbreak of World War II, when output almost doubled within a period of five years, was facilitated by the existence of a large unused labour pool at the outset of hostilities. During the war years a large proportion of resources was diverted to the war effort, resulting in the expansion of many defence-oriented industries. At the same time shortages of consumer and investment goods were created in other areas while income and savings were rising. During the immediate post-war period a certain amount of industrial dislocation occurred as a result of re-tooling and a large-scale changeover to peacetime production, coupled with major labour unrest in some industries. This phase of readjustment, however, did not generally extend beyond 1946, following which production resumed its upward trend.

The post-war period was marked by three major expansions. The first was based on satisfying the backlog of war-deferred investment and consumer demand and on supplying the needs of the war-devastated countries, especially for various materials. The second was based on the requirements of defence-supporting industries following the outbreak of the Korean war, and on stock-piling requirements at home and abroad. The third was the investment boom of the mid-fifties during which output reached

CHART-4



**Note:** The average annual rate of growth of per capita output, computed using the least squares of logarithms method, was 2.3 per cent for the period 1935-61.

Percentage Distribution of Gross National Expenditure, Selected Years<sup>1</sup>

	1935	1939	1945	1949	1953	1956	1959	1961
<b>Personal expenditure</b> .....	<b>77.4</b>	<b>70.8</b>	<b>58.9</b>	<b>66.8</b>	<b>62.4</b>	<b>61.6</b>	<b>64.7</b>	<b>65.8</b>
Durables .....	5.9	5.6	3.2	7.0	8.0	8.0	7.7	7.3
Non-durables .....	42.7	38.8	35.4	38.5	32.8	31.8	32.5	32.9
Service .....	28.8	26.4	20.3	21.3	21.6	21.8	24.5	25.6
<b>Government expenditure</b> .....	<b>12.6</b>	<b>12.1</b>	<b>30.9</b>	<b>13.0</b>	<b>17.7</b>	<b>17.6</b>	<b>18.6</b>	<b>19.5</b>
<b>Business gross fixed capital formation</b> .....	<b>8.6</b>	<b>10.5</b>	<b>8.7</b>	<b>18.6</b>	<b>20.0</b>	<b>22.2</b>	<b>19.8</b>	<b>17.6</b>
New residential construction .....	2.5	3.1	2.7	4.9	4.7	5.0	5.0	3.9
New non-residential construction .....	2.7	2.9	2.1	5.6	6.9	8.5	7.4	7.2
New machinery and equipment .....	3.4	4.5	3.9	8.1	8.4	8.7	7.4	6.5
<b>Exports</b> .....	<b>26.4</b>	<b>25.7</b>	<b>30.4</b>	<b>24.6</b>	<b>21.6</b>	<b>20.8</b>	<b>19.2</b>	<b>20.6</b>
<b>Imports</b> .....	<b>- 23.6</b>	<b>- 23.6</b>	<b>- 24.6</b>	<b>- 23.6</b>	<b>- 23.4</b>	<b>- 25.2</b>	<b>- 23.4</b>	<b>- 23.0</b>

<sup>1</sup> Analytical tables, *National Accounts, Income and Expenditure, 1926-1956, and 1961*. (As of 1955 the electricity and gas components of personal expenditure have been reclassified from services to non-durable goods).

a new high level. These strong demand influences combined to make most of the period one of fairly rapid and sustained growth. Production data reveal, however, a diminishing rate of increase during the late fifties, as external sources of supply for many commodities multiplied and as the competition encountered by Canadian producers intensified. At the same time there was an absence of strong stimulants to domestic demand such as the deferred demand and population growth of the preceding periods. During the latter part of 1961, however, there were indications of re-emerging strength both in production and in demand.

Along with the increases in total final demand there were also shifts in the composition of demand which, as noted in the following paragraphs, affected the output of the various industries. Imports retained roughly the same relative share of G.N.P. while exports, as a percentage of total expenditure on Gross National Product, declined from 26.4 per cent in 1935 to 20.6 per cent in 1961.<sup>14</sup> This would appear to be an indication of the growing importance of the domestic market as an outlet for the products of Canadian industry. During this period government expenditure and business gross fixed capital formation made considerable relative gains. At the same time, personal expenditure on goods and services, as a percentage of total expenditure, declined from 77.4 per cent in 1935 to 65.8 per cent in 1961.

As can be seen from the preceding table, personal expenditure on durable goods increased relatively while that on non-durable goods declined. This is understandable in view of the fact that in 1935 the Canadian economy had not as yet recovered from the depression, while the 1956-61 period was one of high-level production. In periods of severe contraction, expenditures on the necessities of life seem to take priority over postponable expenditures.

An examination, at a detailed level, of the trends in demand-supply relationships would be of interest, but it is difficult to establish a causal relationship between the output of an industry and the expenditure on its products. However, it might be possible to arrive at a rough estimation of the effects on production trends of broad changes in demand. Thus, the relative gains in expenditure on new construction, as shown in the preceding table, indicate increased construction activity, while the growing share of expenditure on new machinery and equipment and consumer durables suggests expansion in some areas of manufacturing and the extractive industries. For example, an increased demand for automobiles, in addition to expanding the production of the motor vehicle industry, would indirectly create new demand for the raw materials used in their production. This in turn would stimulate production in the extractive industries if imports of

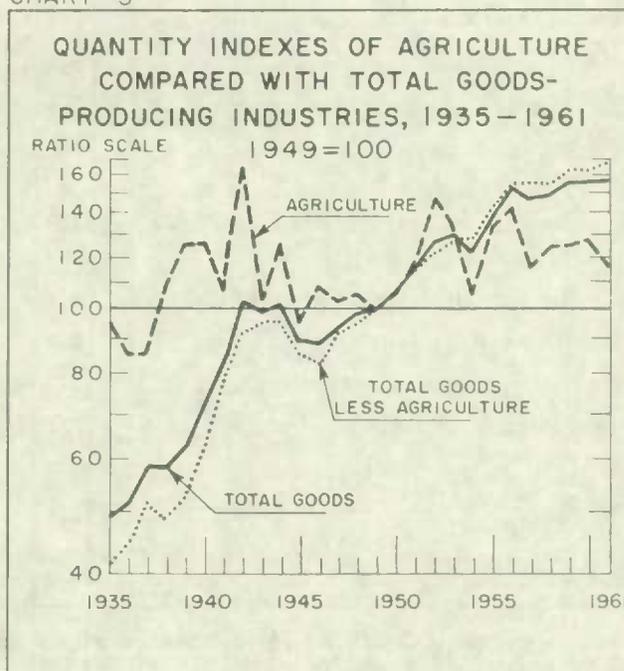
<sup>14</sup> As indicated in *National Accounts, Income and Expenditure, 1926-1956 and 1961*, the ratio has been declining consistently since 1926 (except for the World War II period).

these materials did not increase to the same extent. This appears to have been the experience of Canadian extractive industries during the post-war period. Further knowledge concerning these conclusions can be obtained by tracing the development of the various industries during the period under consideration.

An inspection of the rates of growth of the industries and industry groups reveals that the highest rates occurred in the electric power and gas utilities, the mining, the construction and the manufacturing industries, with trade and transportation, storage and communication expanding at about the same rate as total manufacturing. No industry group showed an actual decline over the period as a whole. Agriculture had the lowest rate of growth—less than 1 per cent. However, it is essential to examine the pattern of development in more detail.

Most notable was the absence of strong expansionary forces in agricultural production. As in most other industries, output in agriculture expanded during the early war years and again during the period from 1949 to 1952. In neither case, however, did the upward trends continue. Grain surpluses existed during most of the post-war period. At the same time the substantial movement of labour away from agriculture continued. Chart 5, a comparison of agriculture and total goods-producing industries, shows how the former, especially during the 1950's, exercised a dampening influence on the aggregate index. This relative stability appears to be more pronounced in the output of vegetable products than in the output of animal products. The latter showed smaller year-to-year fluctuations over the entire period, and a more rapid growth during the fifties than the former, with the average annual rate of growth for the 1935-61 period as a whole very nearly

CHART-5



the same for both components (approximately 1.8 per cent).<sup>15</sup>

Forestry,<sup>16</sup> like agriculture, showed wide year-to-year fluctuations. Production in this industry however, was to a far greater extent geared to

<sup>15</sup> It should be borne in mind that although the gross output of agriculture shows a growth rate of 1.8% per annum the industry indexes are prepared by subtracting intermediate material and service inputs wherever possible. This input deduction results in a net output rate of growth of 1 per cent. This was due to a three-fold increase in material inputs caused, for the most part, by increased farm mechanization but also by the more extensive use of fertilizers, special feeds and similar materials.

<sup>16</sup> See Appendix B for a description of industry content.

demand and price changes. The effects of these factors on forestry output can be traced on Chart 7. Production increased following the outbreak of World War II as a result of an increased demand for the materials provided by this industry, levelled off during 1941, but began to expand once more in 1943, more slowly at first, but from 1946 to 1948 at a more rapid rate. Production declined during 1948-49, but rose again during 1950 and 1951 to a post-war peak of 141.5 which was not surpassed until 1956 when an all-time high was reached. The high levels of output, especially of pulpwood, resulted in general over-production and inventory accumulation. These factors, followed by a drop in domestic and foreign prices during 1957, resulted in a significant decline in output, which lasted until 1959. Produc-

**Average Growth Rates<sup>1</sup> in Selected Industry Divisions and Groups**  
(Per cent increase per year)

	1935-61	1946-61
Gross Domestic Product .....	4.5	4.2
Goods-producing industries .....	4.4	4.2
Agriculture .....	0.9	1.2
Forestry .....	3.2	1.4
Fishing and trapping .....	1.9	1.6
Mining .....	7.3	9.5
Manufacturing .....	5.1	3.9
Construction .....	6.9	6.2
Electric power and gas utilities .....	8.3	9.8
Other goods industries n.e.c. ....	3.8	3.2
Service-producing industries .....	4.5	4.3
Transportation, storage and communication .....	5.1	4.4
Transportation .....	4.7	3.6
Trade .....	5.3	4.1
Finance, insurance and real estate .....	4.9	5.2
Public administration and defence .....	3.5	4.7
Community, personal, recreation and business service .....	4.0	3.5
Commercial industries <sup>2</sup> .....	4.7	4.2
Non-commercial industries <sup>2</sup> .....	3.0	4.6

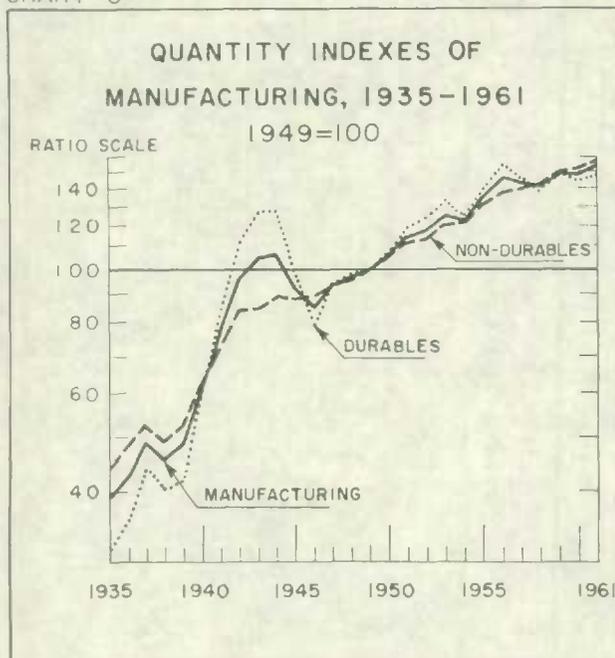
<sup>1</sup> The calculations were based on the least squares of logarithms method. This method takes into account movements within the period, thus yielding more meaningful measures of average growth than would result from the use of terminal years only. The growth rates were computed both for the entire 1935-61 period and for the 1946-61 period. For mining and manufacturing the computation was extended back to 1926 (using published monthly data), yielding growth rates of 5.3 and 5.1 respectively for the period from 1926-61. During the same period, G.N.E. in constant dollars grew at a rate of 4.2 per cent per annum. The growth rates referred to in the text pertain to the 1935-61 period. All other computations were made for purposes of comparison only, in order to provide a background for evaluating the trends for the 1935-61 period, which were in some cases significantly affected by wartime developments and the depression of the 1930's. The post-war period, although less affected by such irregular factors, may be too short for the establishment of representative growth rates.

<sup>2</sup> See Appendix B for a description of industry content.

tion increased subsequently; nevertheless there cannot be said to have been an expansion in forestry output during the 1951 to 1961 period.

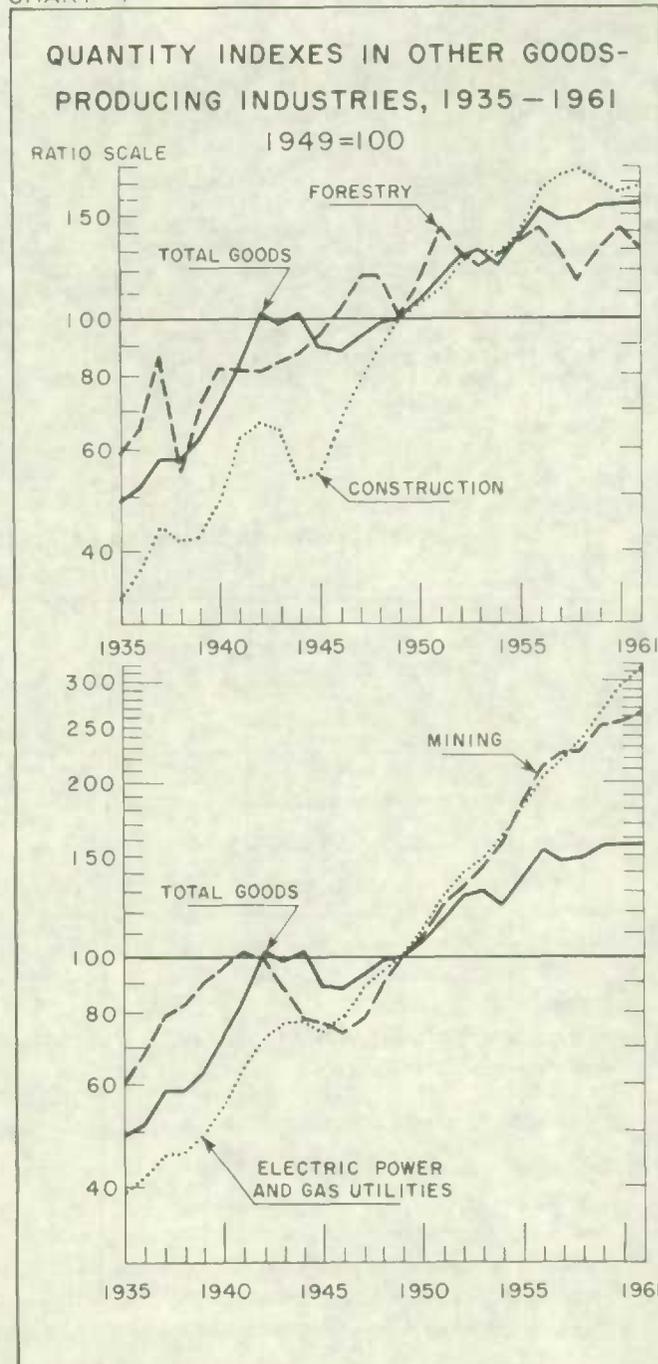
Construction follows a clear-cut pattern of growth. During the early war years there was a sharp expansion in construction activity as a result of defence requirements. Following the 1943-45 decline there was another period of rapid expansion when volume almost doubled in the course of four years in response to deferred demand. After the initial shortages had been met, construction continued to expand more slowly until defence expenditures associated with the Korean war and some of the resource developments of the early 1950's, along with residential building activity, provided additional stimuli. The investment boom of the mid-fifties, which centred mostly around the resource industries, raised construction volume to a high level. Following 1958, the levels of output in construction were lower, although expansion was resumed during 1961.

CHART-6



The electric power and gas utilities industry showed a steady increase since 1949. As noted before, the industry was remarkable for its high growth rate. This rapid expansion was the result of extensive hydro-electric projects. The construction of the natural gas pipelines during the fifties was followed by a sharp increase in the output of gas utilities.

CHART-7



Mining,<sup>17</sup> which reached a peak early in the war, declined subsequently until about 1946, largely as a result of reduced production of gold and other metals. In 1947 mining resumed its upward trend - from 1954 to 1956 at an accelerated rate. Substantial increases in the production of iron ore, uranium, petroleum and natural gas were, for the most part, responsible for the rapid expansion. Other minerals

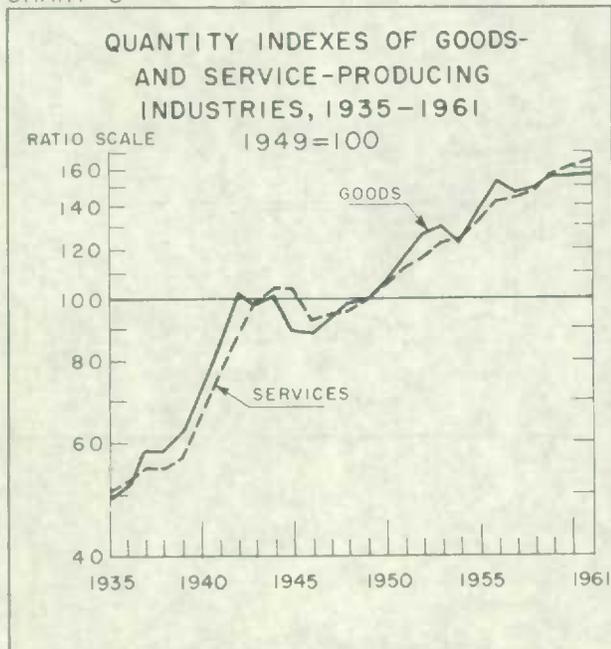
See footnote page 23.

also showed sustained growth, with the exception of coal, the production of which declined steadily. Since 1956 mining growth has been less rapid. The growth in the output of the mining industry during most of the post-war period was at the centre of the investment developments of the 1950's, and provided some of the impetus for the expansionary forces in the rest of the economy.

Manufacturing<sup>17</sup> showed the highest rates of growth during the early war years, when, as indicated in Chart 6, production more than doubled between 1939 and 1943. This very high rate of growth reflected sharply expanded output of war-required products and was particularly apparent in the area of durable goods manufacturing. The wartime peak in aggregate manufacturing output which was reached in 1944, was not surpassed until 1950, four years after manufacturing began to recover from the dislocations associated with the changeover to peacetime production. This growth occurred in response to pent-up demand both for consumer goods and for capital goods. The Korean war gave the production of durable goods a renewed stimulus. Following the armistice in 1953, defence expenditure and foreign demand began to decline and the 1954 recession saw a drop of 3 per cent in manufacturing output. At this point stimuli usually associated with longer term demand influences, such as resource investment, housing requirements and an expanding population became more evident, resulting

<sup>17</sup> For a more detailed analysis of mining and manufacturing production during the war years, see pp. 38-54 of *Revised Index of Industrial Production, 1935-1951*, DBS Reference Paper 34. For an analysis relating to the post-war period see Part II of *Revised Index of Industrial Production, 1935-1957*, DBS Catalogue No. 61-502.

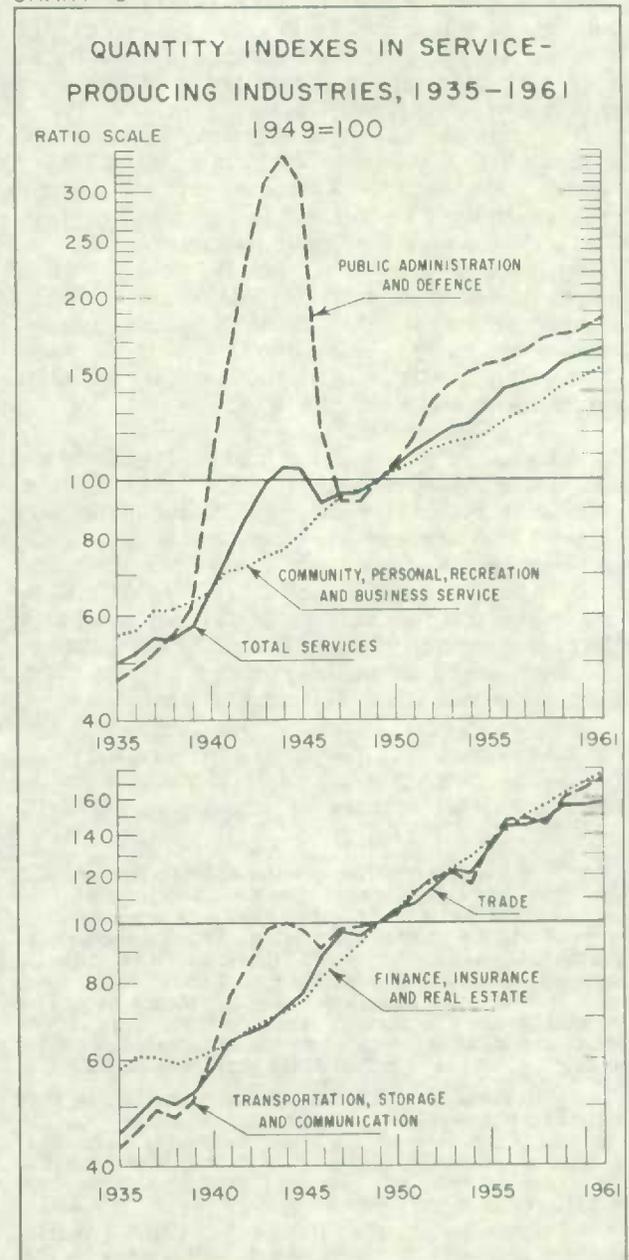
CHART-8



in a rapid recovery: manufacturing output expanded by 18 per cent between 1954 and 1956. Following 1956, the growth has been more moderate.

The difference between the two major components of manufacturing, non-durables and durables, is immediately apparent from Chart 6. Non-durables expanded more or less steadily throughout the entire period with chemicals, petroleum products and the foods and beverages component contributing much to this growth. Durable goods manufacturing, on the other hand, was sensitive to changes in investment activity and defence expenditures. In addition, consumer demand for durable goods such as motor vehicles exhibited considerable cyclical sensitivity.

CHART-9



The demand by both government and business for the output of some of the service industries (such as financial and business) appears to have been increasing over the period. Personal expenditure on services also increased but grew less rapidly. The output of the service-producing industries kept pace with the increases in total Gross Domestic Product.<sup>18</sup>

The smooth trend of the service industries was interrupted during the 1940-46 period as a result of the sharp upsurge in the output of the public administration and defence component. This development was also reflected, although to a considerably lesser degree, in the transportation, storage and communication group. In 1949 public administration and defence entered another phase of growth. This was accelerated during the Korean war period. In contrast to the above, output of wholesale and retail trade grew less rapidly during the later war years with major expansionary periods confined to the early war years and the immediate post-war period when the lifting of wartime controls released pent-up demand. From about 1956 there appears to have been a decline in the rate of growth in the volume of trade, similar to that in the goods-producing industries. Unlike that of many other industries, the rate of growth of the community, personal, recreation and business service industry has been sustained during the late fifties. This expansion is largely the result of relatively strong gains in the hospital, education and business service components.

The rate of growth of the finance, insurance and real estate industries was 4.9 per cent per annum. Even after abstracting from the effects of the rent component, which expanded more rapidly during the post-war period, this group was among the faster growing industries in the economy.<sup>19</sup> Business services expanded at an average annual rate of about 6 per cent during the 1935-61 period. This industry includes, among others, advertising agencies, law firms, accountants, and stenographic agencies.

One of the most striking examples of the growing demand for different types of service has been the adoption and acceptance of advertising on an in-

<sup>18</sup> In comparisons of service industry output with the G.N.E. data for services, however, caution should be exercised. In the table on page 19 only personal expenditure on services is shown explicitly. This aggregate does not include government expenditure on services, exported services or business expenditure on services. Any services, such as trade and transportation, which are absorbed in final goods and services are excluded. Thus, differences are to be expected between personal expenditure on services and total output of the service industries.

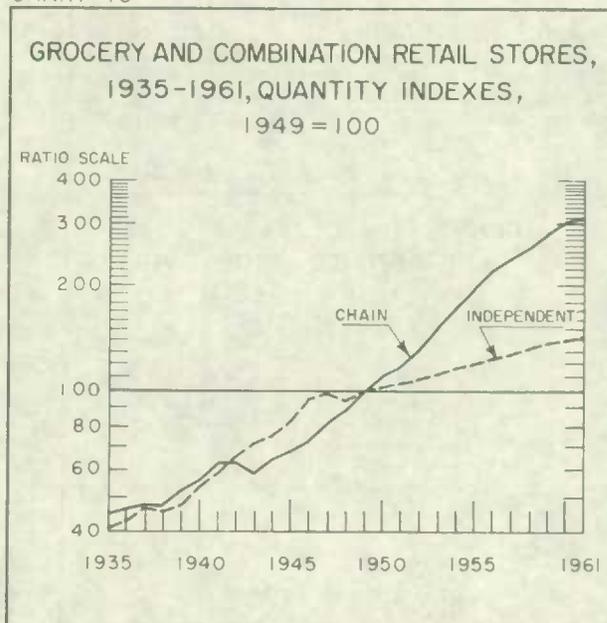
It should also be noted that, because of data deficiencies, service inputs are not deducted from the net output measure of the goods-producing industries. Insofar as intermediate business services rose more than net output including such services, the industry measures would have an upward bias.

<sup>19</sup> Since the output of these industries is generally assumed to move with the volume of labour input for purposes of this study and since they were undoubtedly affected by capital investment these rates of growth may be understated.

creasing scale. Advertising revenues provided the main revenue sources for a substantial segment of the communication media, such as the printing and publishing and the radio and television broadcasting industries. The growth of advertising may have been a reflection of increasing competition among producers who used it as a means of product differentiation and as a stimulus to demand. In any case, it affords one illustration of a shift in marketing techniques.

As industrial capacity increased, the attention of the business community turned toward the problem of distribution. The emphasis on the satisfaction of consumer demand resulted, however, in certain changes in the distributive process. The following chart serves to illustrate such a change in the field of food distribution, which has been subject to steady growth without major cyclical disruptions. As can be seen, there was a marked shift after the war from the small retail outlet to chain stores. These chain stores could command the capital to build large, attractive outlets in the growing suburban areas, and provide a greater variety of well displayed food and non-food items to the consumer.

CHART-10

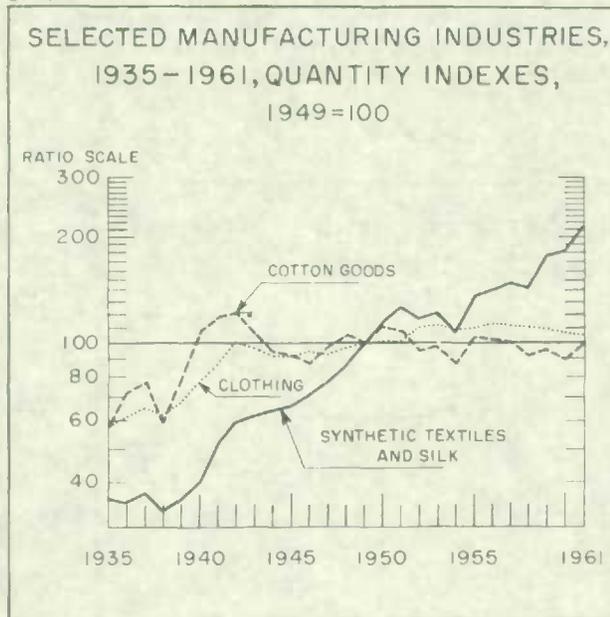


Even more remarkable than the demand-induced changes that were touched upon above are the striking changes brought about by the technological

discoveries and innovations that have transformed whole production processes and opened up hitherto unknown areas in the fields of manufacturing, transportation and communications. As a result of these transformations, newer industries, such as air transport, have assumed major importance in a comparatively short time; entirely new industries, such as the gas pipelines, have appeared; and others have created a profusion of new products, such as the petro-chemicals of the chemicals industry and the television and other electronics products of the telecommunication equipment industry.

As was to be expected, those industries which were in a position to benefit from the above innovations, were among the most rapidly expanding in the economy, although the impact of the expansion spread through the entire economic system, creating new demand, both for the new products and the materials used, and expanding employment opportunities. Thus technological change has acted as a major stimulant to growth. The following charts illustrate this point in the field of manufacturing.

CHART-11



The above changes in production, distribution and demand have also influenced the level of employment in the various industries. As is well known, there was a considerable shift in employment during the post-war period from the goods- to the service-producing industries. A more detailed study, however, reveals that most of the loss took place in agriculture. From 1946 to 1961 employment in agriculture decreased its share of total employment from 25 per cent to 11 per cent, while total employment in-

creased by approximately 30 per cent during the same period. Employment in the goods-producing industries as a whole remained at about the same level throughout this period, while employment in the service-producing industries increased from 39 per cent to 53 per cent of the total labour force.

CHART-12

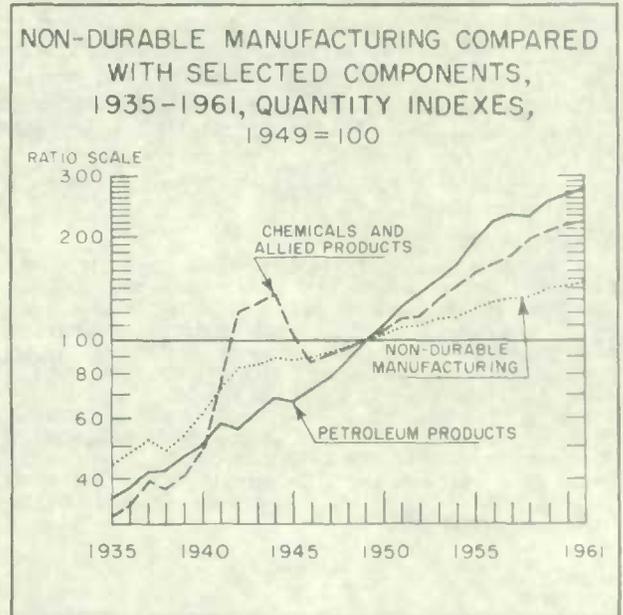
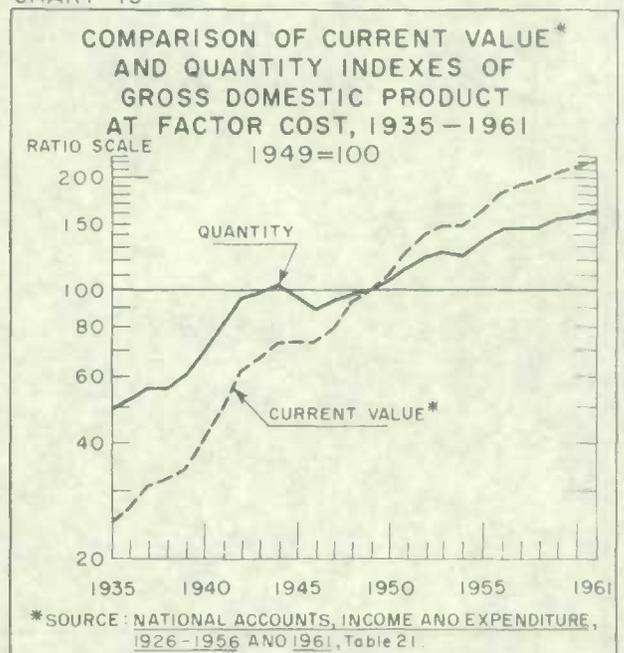


CHART-13



Thus services, in the early 1960's, absorbed a higher proportion of total employment than did the goods-producing industries.<sup>20</sup>

The gains in output since 1935 were accompanied by periods of rapid price increases, particularly following World War II and during the Korean war. Thus, the increase in value has been substantially greater than the increase in volume,<sup>21</sup> as is noted on the preceding chart. Price controls, imposed during World War II, were gradually relaxed and removed beginning in the latter part of 1946. A back-log of demand and an accumulation of savings had built up in the personal and business sectors of the domestic economy, and these, together with a high level of demand in the external sector, contributed to the substantial price increases in the immediate post-war period. Prices did not level off until 1949. With the outbreak of the

Korean war in mid-1950, demand once again out-paced production and prices rose sharply over the next eighteen months. By 1952 prices had begun to level off again. In 1955 and 1956 prices rose once again but much less sharply than in the previously noted periods. The late 1950's and early 1960's were on the whole characterized by relatively stable prices.

**Economic Fluctuations, 1946-61**

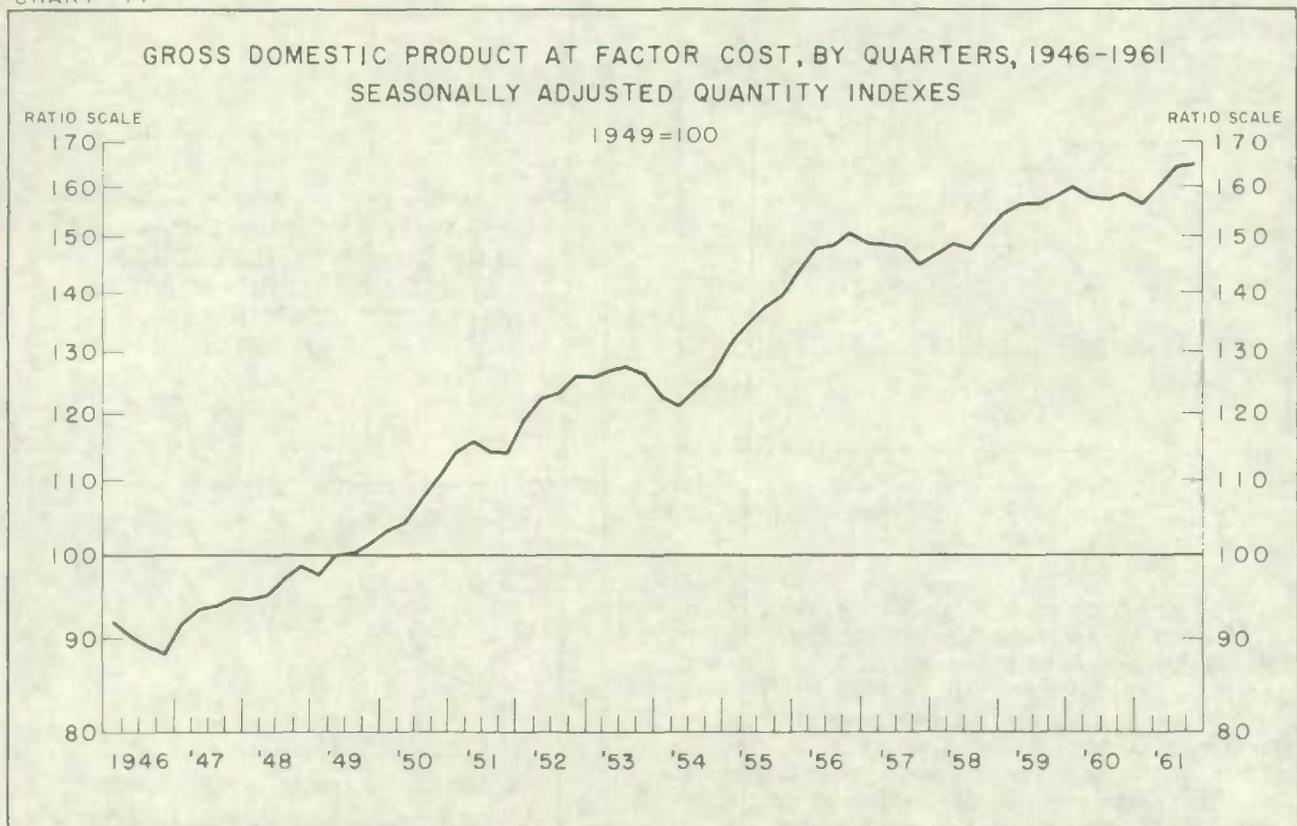
Thus far only long-term trends and major factors affecting the period as a whole have been considered. The charts and industry descriptions, however, show quite clearly that there has not been uniformity of development within the twenty-seven year span under consideration. In fact, for most industries, developments seem to fall naturally into two major periods: the period from 1935 to the end of World War II and the post-war period. During the first phase the war effort so disrupted the normal economic process that cyclical analysis becomes difficult. It is the post-war period therefore, upon which discussion of cyclical patterns must be concentrated.

From an inspection of real domestic product data, as shown on Chart 14, it can be concluded that there have been three major production cycles

<sup>20</sup> See Part VI, Table 8.

<sup>21</sup> Prices have both direct and indirect effects on the value and volume of production. An attempt to analyze structural changes in terms of constant dollar data alone would at best yield only a presentation of differential growth rates in a new guise, because the built-in weighting pattern of the base period does not allow for the full effects of price changes to be shown. Any compositional analysis, therefore, would also have to take account of the current structure of prices, otherwise the issue would remain inconclusive. The best that can be done, on the basis of the present industry-of-origin study is to compare current and constant dollar total Gross Domestic Product at factor cost.

CHART - 14



during the post-war period. The downward phases of these cycles extended from the third quarter of 1953 to the second quarter of 1954 for the first cycle; from the fourth quarter of 1956 to the fourth quarter of 1957 for the second cycle; and from the first quarter of 1960 to the first quarter of 1961 for the third cycle. The expansionary phase of the first cycle extended from the third quarter of 1954 to the fourth quarter of 1956, while that of the second cycle lasted from the first quarter of 1958 to the first quarter of 1960. In the third cycle, production began to expand during the second quarter of 1961 and was still expanding at the end of that year. These specific timing patterns will be referred to throughout the industry analysis which follows.

Fluctuations in real Gross Domestic Product are the result of the combined changes in its various components. In order to analyze the aggregate movements therefore, it is first necessary to examine the cyclical fluctuations within individual industries. Some industries have very pronounced cyclical patterns, others show strong swings of an irregular nature, while the remainder follow a relatively smooth expansionary path. The first group can be expected to have the most pronounced influence on the timing, duration and magnitude of the fluctuations in the aggregate. The second group might either modify or accentuate some of the above tendencies, while the last group would generally tend to play a stabilizing role in smoothing the fluctuations in economic activity. It is this general criterion that will be used through the successive stages of disaggregating G.D.P. into groups of cyclically sensitive and cyclically insensitive industries.

Chart 15 shows a breakdown of total production between the commercial and the non-commercial industry groups. As illustrated by this chart, it is the business sector of the economy which is particularly subject to cyclical changes. On the same chart, an attempt is also made to isolate the influences of the irregular fluctuations in agricultural production on the commercial sector of the economy. The inclusion of agriculture in most cases magnifies the amplitude of the cyclical downturn, as the years in which the three post-war troughs occurred also happened to coincide with particularly poor crop years. The effects do not appear to be so pronounced during the expansionary phase of the cycles. On the whole, the exclusion of agriculture seems to affect the level rather than the direction of movement of the aggregate. In only one instance does the exclusion of agriculture alter the timing of the cyclical turning point of the aggregate, namely during the second cycle, when the peak moves from the fourth quarter of 1956 to the first quarter of 1957. It can be seen, therefore, that neither the non-commercial nor the agricultural component of G.D.P. changes the general cyclical pattern of aggregate production.

Chart 16 points up the differences in cyclical movements between the goods- and the service-producing industries. On the whole, the former appear to have been considerably more volatile than the latter. Not all of the goods-producing industries, however, exhibit regular cyclical fluctuations, or fluctuations of the same severity and timing.

CHART - 15

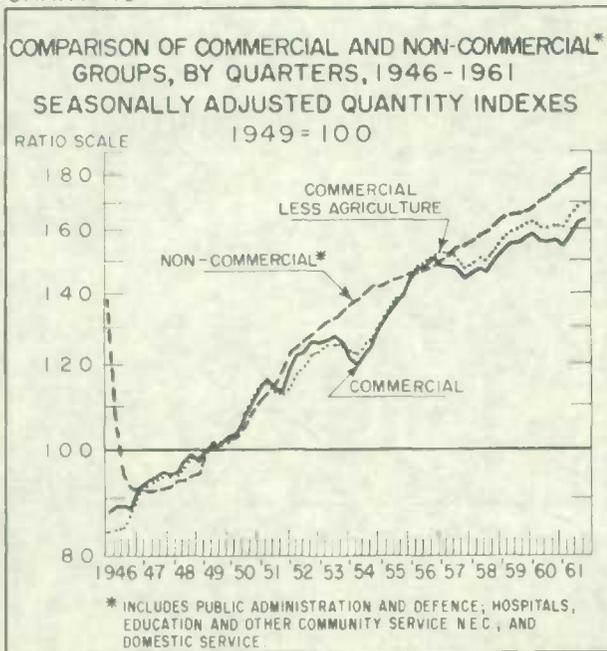


CHART - 16

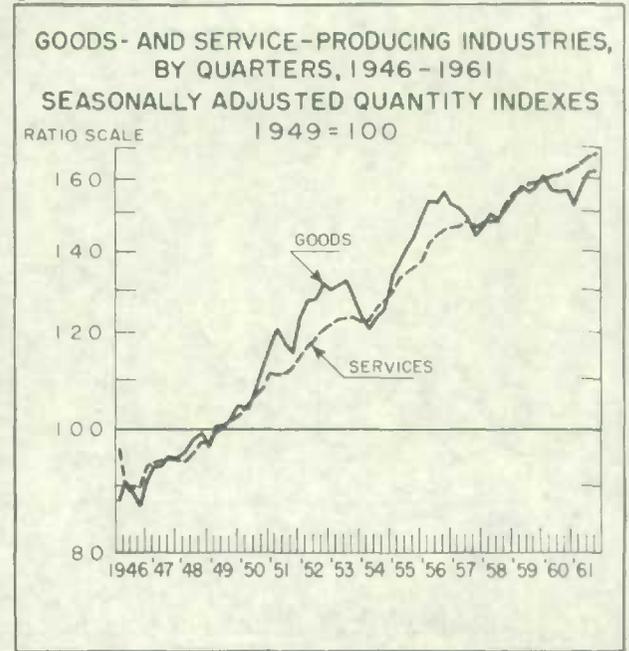


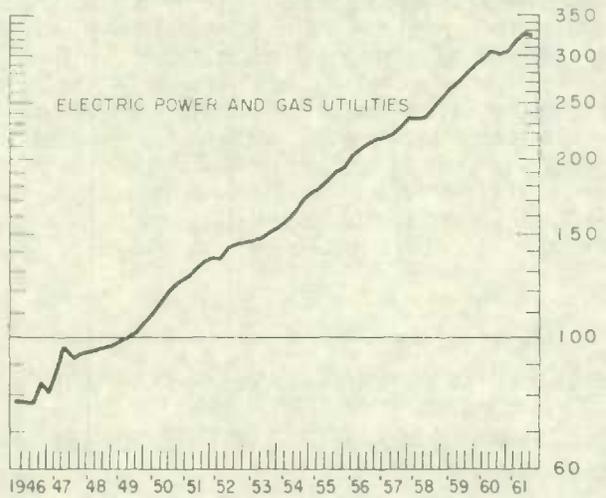
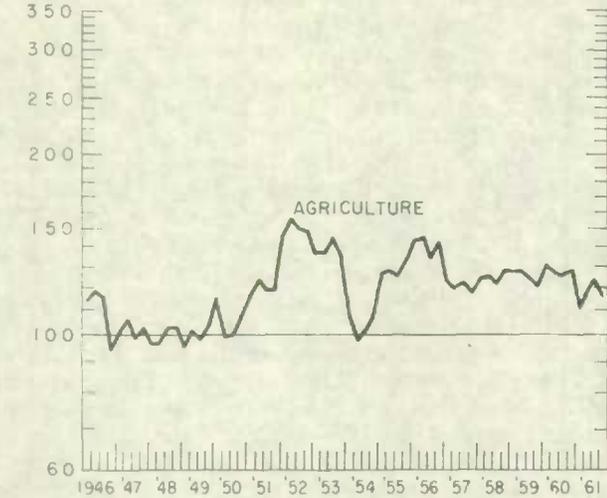
CHART - 17

SELECTED GOODS-PRODUCING INDUSTRIES, BY QUARTERS, 1946-1961  
SEASONALLY ADJUSTED QUANTITY INDEXES

1949=100

RATIO SCALE

RATIO SCALE



During the post-war period there were severe irregular movements in agricultural production, mostly associated with crop failures or with exceptionally good harvests. Forestry, which also was subject to sudden upward and downward movements resulting from changing demand conditions, failed to exhibit a distinct cyclical pattern. Mining, during the late 1950's, showed a more consistent cyclical development. Construction responded to changes in long-term investment projects, particularly in the area of resource development, rather more than to irregular or short-term business fluctuations. Electric power and gas utilities expanded rapidly during this period and, in times of general cyclical weakness, merely suffered some slowdown in the rate of growth. Of all the goods-producing industries, therefore, manufacturing shows the most clear-cut cyclical pattern, the timing of which coincides almost exactly with that of total G.D.P. (in the first cycle there was a lead of one quarter in the downturn and in the second cycle there was a lag of one quarter in the upturn).

Manufacturing constitutes more than a quarter of total G.D.P. and therefore deserves a more detailed examination. Chart 18 shows a breakdown of total manufacturing production between durables and non-durables. Clearly, it is the durable manufacturing component that accounted for the pronounced cyclical pattern in total manufacturing. Except for the first cyclical downturn which was longer and more severe in durables and comparatively mild and short-lived in non-durables, the cyclical turning points in durables coincided with those in total manufacturing. The relative cyclical insensitivity of non-durables can, for the most part, be traced to the predominance of such steadily expanding components as foods and beverages.

CHART - 18

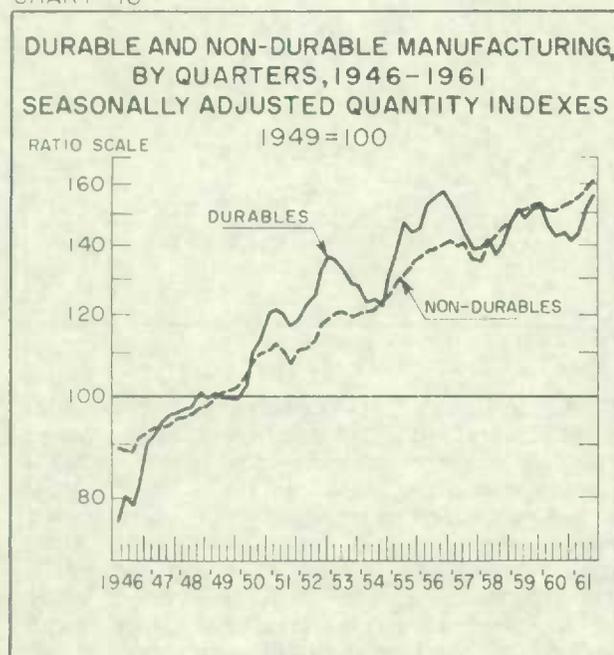


Chart 19 is an attempt to group the various goods-producing industries into aggregates which would make more apparent the underlying short-term expansion patterns within the economy. As noted earlier, the extractive industries have displayed rather frequent and often violent fluctuations of an irregular nature, while the remaining goods-producing industries exhibit more regular short-term fluctuations of smaller magnitude. It is also apparent from this chart that the latter group of industries has expanded considerably more rapidly during the 1946-61 period.

CHART - 19

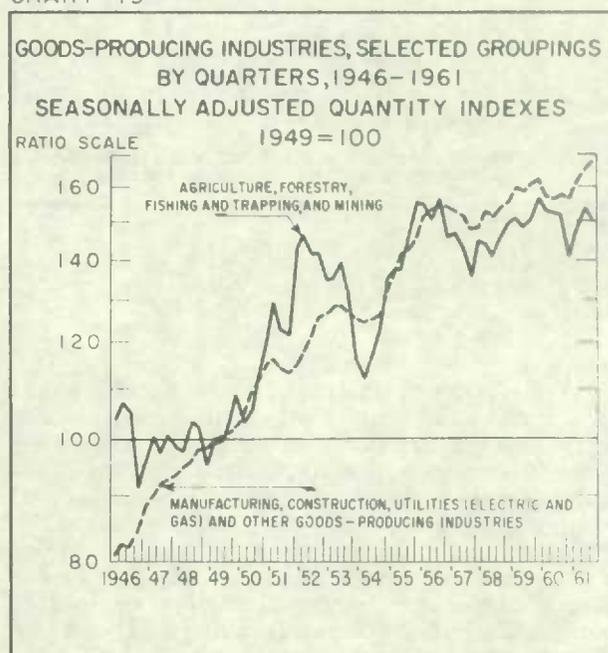


Chart 20 shows a similar disaggregation of the service-producing industries. Here the difference between the cyclical pace-setters and those industries which do not respond to short-term changes in business conditions is even more remarkable. The combined output of transportation, communication, storage and trade followed a cyclical pattern similar to that of manufacturing, both in the timing of the turning points and in the severity of the recessionary phases. The remaining service-producing industries, however, followed a smooth expansionary path which was steeper, especially in the late fifties, than that of the former industry group. Most of these remaining service-producing industries, therefore, fall into the group of cyclically insensitive industries. During the three post-war downturns they helped to sustain the level of economic activity.

CHART-20

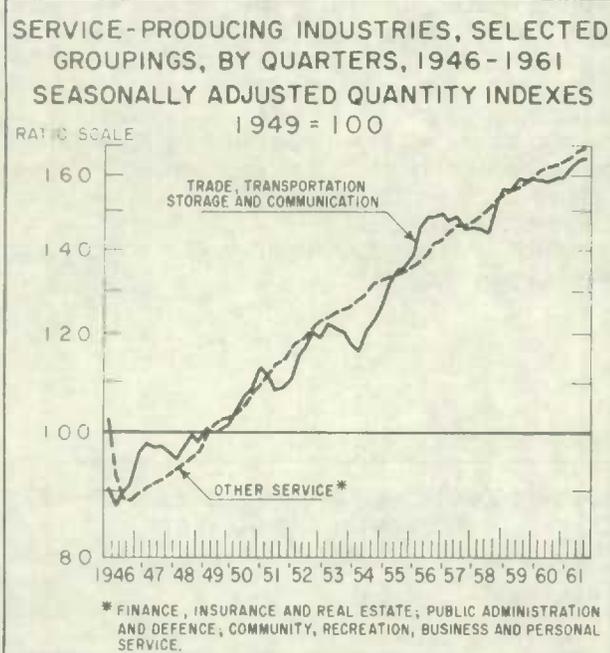
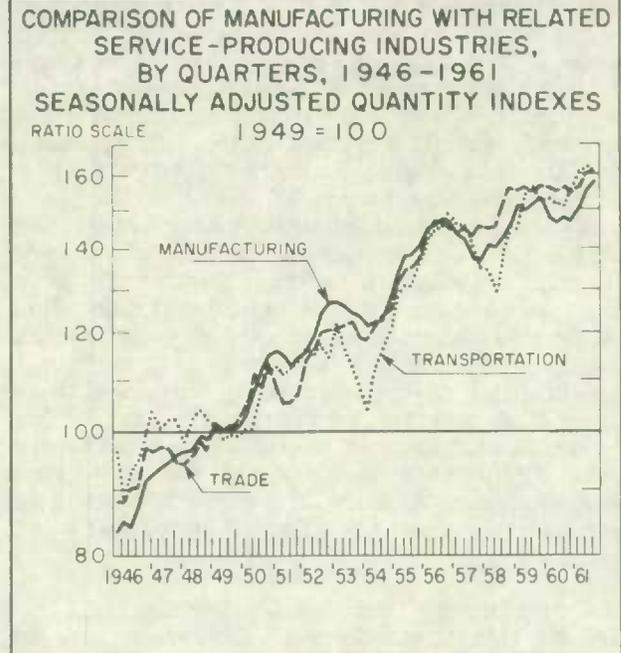


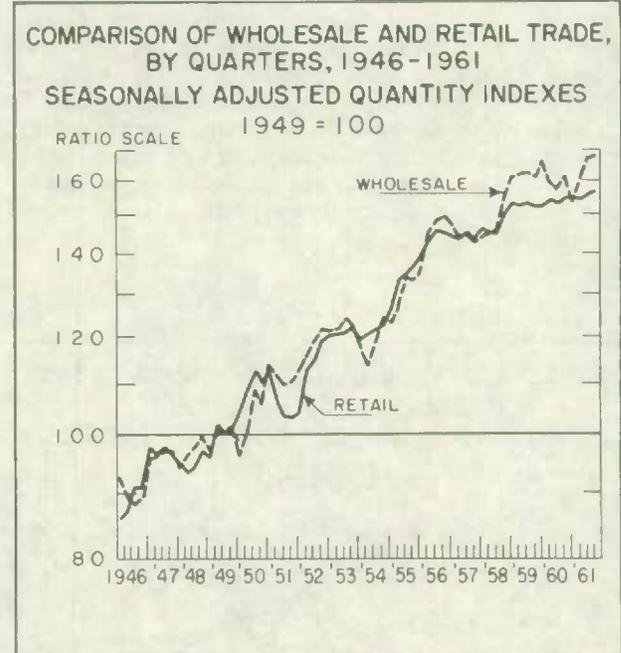
CHART-21



The above examination of the cyclical fluctuations of major industries points to the preponderance of clear-cut cyclical patterns in manufacturing, transportation and trade. Chart 21 illustrates the similarity of these patterns, especially in the area of manufacturing and trade. Transportation was on the whole more volatile than the other two industries, with sharper relative declines during the recessionary phases of the first two post-war cycles. Transportation lagged manufacturing and trade by one quarter in the downturn of the second cycle, but began to decline one quarter earlier than manufacturing during the third cycle. Trade appears generally to have been the least volatile of the three series. During the upturns, however, growth in trade was as rapid as that in manufacturing.

The close relationship between manufacturing and trade is even more apparent when total trade is broken down into its two components—wholesale and retail trade, as illustrated in Chart 22. The timing of the cyclical turning points in wholesale trade is, save in one case, identical with that in manufacturing. Retail trade is the less volatile component of this series and has exerted a modifying influence both during periods of contraction and expansion. It is interesting to recall in this connection the relative cyclical stability of non-durable manufacturing and the personal expenditure component of G.N.E., more particularly that of expenditure on non-durables. This behaviour pattern reflects the fact that consumers are strongly resistant to any lowering in their basic standards of consumption during recessionary periods.

CHART-22



A breakdown of non-durable manufacturing shows that its foods and beverages component expanded steadily, clothing exhibited comparative stability with a decline since 1957, while textiles showed short-term movements, roughly coincident with the manufacturing cycle. Both clothing and textiles have been subject to strong competition from imports and changes in their levels of output cannot, therefore, be explained by considering only changes in domestic demand. However, the two

industries serve as an illustration of the wide variety of factors and influences which determine the levels and shape the cyclical patterns of individual industries.

Chart 23 illustrates inter-industry dependence by showing the output of the motor vehicles industry along with that of one of its raw material suppliers—primary iron and steel. The similarity of the cyclical patterns of these two industries is apparent at a glance, indicating the sensitivity of both industries to general business conditions. Some points, however, are of special interest. During the steel strike in the United States in 1959, the Canadian motor vehicle industry was more dependent on Canadian steel, as were other industries, both in Canada and abroad. It can be seen from the chart that production of primary iron and steel did in fact reach a post-war peak during 1959 prior to the strike, while the production of motor vehicles declined. Following the strike production of primary iron and steel in Canada dropped sharply. It must be pointed out, however, that there was a strike in the Canadian iron and steel industry during the third and fourth quarters of 1958, so that the rapid expansion in 1959 may have been partially due to an attempt to rebuild depleted stocks.

Chart 24 shows the three major post-war cycles in G.D.P., with the peak in each case made to equal one hundred. This is merely to facilitate a comparison of the relative severity and duration of the three cycles. As can be seen, declines tended to

become more moderate with each successive cycle.<sup>22</sup> The downward phases of the last two cycles were longer by one quarter than that of the first cycle, but declines became increasingly milder. The recessionary phase of the first cycle lasted for three quarters, with a resultant contraction in output of 5 per cent. The downward phases of the second and third cycles were of a duration of four quarters each, with declines in G.D.P. of 4 per cent and 2 per cent respectively. The more moderate growth and shorter duration of the expansionary period of the second cycle combined to make the late fifties a period of lower rates of aggregate growth than those exhibited during the preceding period. The time period covered by this reference paper does not permit an analysis of the latter stages of the expansionary phase of the third cycle. During the first cycle, expansion proceeded for 10 quarters and, from trough to the following peak, G.D.P. increased by 24 per cent. During the second cycle, production expanded for 9 quarters but at a slower rate resulting in a 10 per cent gain.

<sup>22</sup> The interaction of long-run trends and short-run fluctuations tends to obscure the demarcation between these two elements of time series. Moreover, the time period under consideration is too short for the emergence of definite trends and patterns in production cycles.

CHART - 23

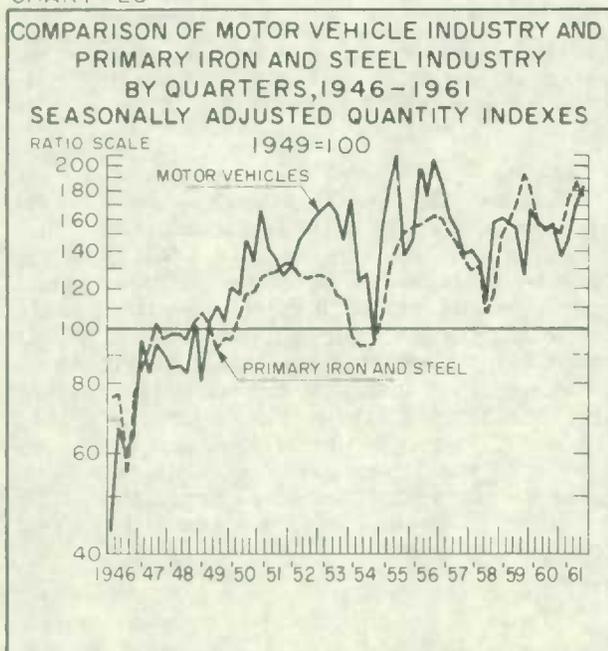
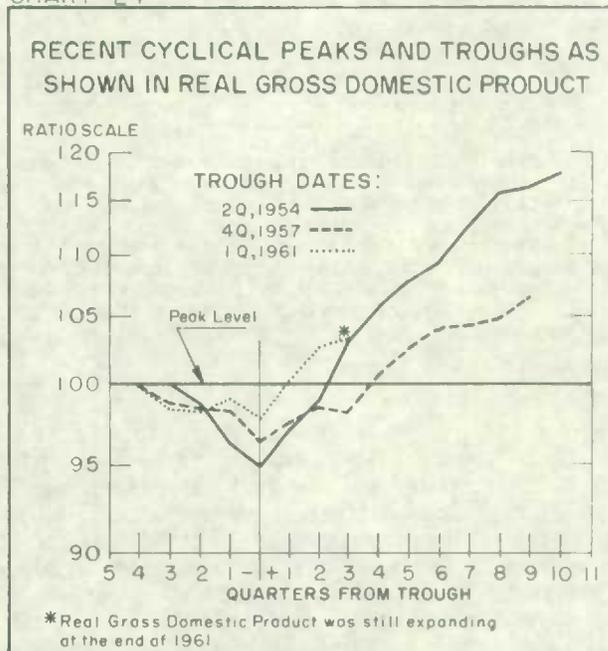


CHART-24



As can be seen from the following table, the group of industries consisting of agriculture, fishing and trapping, and forestry, was the largest contri-

**An Analysis of Industry Production Movements and Industry  
Contribution to Aggregate Change in Recent Cycles**

	Downturns (peak to trough)			Upturns <sup>1</sup> (first three quarters only)		
	3Q '53 to 2Q '54	4Q '56 to 4Q '57	1Q '60 to 1Q '61	2Q '54 to 1Q '55	4Q '57 to 3Q '58	1Q '61 to 4Q '61
	Per cent change					
Gross Domestic Product .....	- 5.0	- 3.6	- 2.1	+ 8.4	+ 1.8	+ 5.3
Agriculture, forestry, fishing and trapping .....	- 26.0	- 18.4	- 12.5	+ 24.7	+ 5.3	+ 3.8
Mining .....	+ 5.8	+ 1.2	- 3.5	+ 13.9	- 0.4	+ 11.4
Manufacturing .....	- 3.5	- 7.2	- 3.8	+ 5.4	+ 2.0	+ 7.5
Construction .....	- 4.6	+ 3.1	- 5.7	+ 6.8	+ 2.6	+ 8.3
Electric power and gas utilities .....	+ 7.0	+ 6.5	+ 4.1	+ 11.8	+ 4.0	+ 7.2
Transportation, storage, communication .....	- 6.1	- 1.6	+ 2.3	+ 13.1	- 5.2	+ 3.3
Trade .....	- 3.0	- 2.6	- 1.5	+ 6.3	+ 1.6	+ 4.0
Other service <sup>2</sup> .....	+ 2.8	+ 3.3	+ 3.3	+ 3.0	+ 3.1	+ 3.0
	Industry contribution to change in G.D.P. <sup>3</sup>					
	(per cent)					
Gross Domestic Product .....	- 5.0	- 3.6	- 2.1	+ 8.4	+ 1.8	+ 5.3
Agriculture, forestry, fishing and trapping .....	- 3.8	- 2.3	- 1.4	+ 2.8	+ 0.5	+ 0.4
Mining .....	+ 0.2	+ 0.1	- 0.2	+ 0.6	-	+ 0.6
Manufacturing .....	- 0.9	- 1.9	- 1.0	+ 1.5	+ 0.5	+ 1.9
Construction .....	- 0.3	+ 0.2	- 0.4	+ 0.5	+ 0.2	+ 0.5
Electric power and gas utilities .....	+ 0.1	+ 0.2	+ 0.1	+ 0.3	+ 0.1	+ 0.2
Transportation, storage, communication .....	- 0.5	- 0.1	+ 0.2	+ 1.0	- 0.4	+ 0.3
Trade .....	- 0.4	- 0.4	- 0.2	+ 0.9	+ 0.2	+ 0.6
Other service <sup>2</sup> .....	+ 0.7	+ 0.7	+ 0.8	+ 0.8	+ 0.7	+ 0.8

<sup>1</sup> In order to facilitate comparisons between the expansionary phases of the three cycles, the per cent changes refer to the three quarters immediately following each trough, as real output was still expanding at the end of 1961.

<sup>2</sup> This group includes the finance, insurance and real estate, public administration and defence and community, recreation, business and personal service industries.

<sup>3</sup> The columns may not add up to the total due to rounding and because of the omission of the other goods industries component, the contributions of which are in most cases negligible. (This component consists of contract drilling, manufacturing repair establishments and municipal waterworks). It should also be noted that the industry contributions to the change in the aggregate can only be derived by using changes in weighted index points as the basis for calculations. In this way the effect on the total economy of changes in the output of each industry can be appraised.

butor to the declines in G.D.P., accounting for nearly two-thirds of the total decreases in each case. Manufacturing was the next major contributor. The effect of these decreases however, was partially offset by the steady increases of the "other service" group (see table) and, to a lesser degree, by the rapid growth of the electric power and gas utilities industries. Mining, which had exerted a sustaining influence during the first two downturns, declined in 1960-61, in contrast to the transportation, storage and communication group which increased during the latter period—largely as a result of expansion in the output of air transport, oil and gas pipelines and grain elevators.

For the majority of industries, as for total G.D.P., recovery was most vigorous during the first expansion, slowest during the second. Manufacturing was the most notable exception to this general pattern, insofar as its highest rates of increase occurred during the 1961 upturn, at which time it constituted the major single expansionary force. The only group of industries to have shown a steady expansion throughout the period was that consisting of finance, insurance and real estate, public administration and defence, and community, recreation, business and personal services. Especially during the second upturn, this group was among the largest contributors to growth.

## PART III

### CONCEPTUAL FRAMEWORK OF ESTIMATES OF REAL DOMESTIC PRODUCT BY INDUSTRY OF ORIGIN



## PART III

### Conceptual Framework of Estimates of Real Domestic Product by Industry of Origin

#### The Concept of Production

1. In measuring the production of a single product such as steel it is normal to think of so many tons of steel when the question of quantity arises. When measuring the combined production of steel and natural gas there is an obvious need for a common denominator, because tons of steel and cubic feet of natural gas cannot be simply added together to obtain a meaningful quantity aggregate. In such a case it is appropriate to use the average unit prices of some time period (chosen as a base) to value the quantities produced before adding them together. The resultant quantity, volume, or real output measure can subsequently be left in its constant or base-period dollar form or it can be expressed in index number form by simply dividing the constant dollar aggregate of the current period by the dollar aggregate of the base period and multiplying by 100. In constructing a quantity index for a combination of industries where the output of one industry can become the input of another, the addition of total production for each industry will result in double-counting. For example, if a portion of natural gas output is used in the production of steel, then that portion is doublecounted unless deducted. In the industry of origin measures such doublecounting is eliminated wherever possible by use of a double deflation technique described in formula form in paragraphs 61 to 64. In this approach both intermediate inputs (materials, fuel, etc.) and total output are revalued in terms of the dollars of a common base year and the constant dollar value of the former subtracted from the latter to yield a constant dollar value added aggregate. This latter aggregate is the desired quantity measure.

2. In the following paragraphs of Part III the concept of production used, as well as various points relating to this concept are discussed. Although much of the discussion is concerned with current dollar values it should be borne in mind that the indexes being described are quantity or real<sup>23</sup> output measures. The use of current dollar values in the initial conceptual discussion is intended to facilitate an understanding of the basic production concept.

3. At a relatively early stage of development it was agreed that the production concept that would be best to use in a study such as this would be Gross Domestic Product at factor cost originating by industry. This concept of economic production<sup>24</sup>

is one of a number that are at the very heart of the main aggregative systems of economic statistics which have been developed at the Dominion Bureau of Statistics. Among these systems are the national accounts and inter-industry flow tables. Each of these deals in part with the measurement of production by individual industries. The G.D.P. at factor cost concept is also a measure of production in wide international use and is recommended by the Statistical Office of the United Nations.<sup>25</sup>

4. The field of economic production statistics has many facets. A way to measure one of these facets is to take the approach to economic production used in this study: measuring the flow of production through demand channels is another; still another is by measuring the distribution of income to the owners of the factors contributing to production. The industry of origin approach used here has the advantage of providing fine industry breakdowns. The demand channel approach would not yield industry production data while the distribution of income approach runs into the severe problem of finding unique deflators for the income flows.

5. The use of the Gross Domestic Product at factor cost concept for the industry indexes confines the real output study to a domestic or geographic area measure.<sup>26</sup> The production measured is that produced by industries located within the geographical boundaries of Canada. The term "domestic" differs from the term "national" as used for national accounting purposes by excluding production in foreign countries accruing to Canadian owners residing in Canada, and including all production taking place within the boundaries of Canada regardless of the ownership of the means of production. To adjust the national measure of production (G.N.P.) to a domestic measure (G.D.P.) it is necessary to add interest and dividends accruing<sup>27</sup> to non-resident owners of capital located within the geographical boundaries of Canada and to deduct interest and dividends accruing to Canadian owners of foreign assets.

<sup>25</sup> *A System of National Accounts and Supporting Tables*, Studies in Methods, Series F, No. 2, Rev. 1. United Nations, New York, 1960.

<sup>26</sup> There are a number of exceptions to this general boundary. In the case of shipping and airlines the services of Canadian-flag carriers are covered regardless of where the service occurred. On the other hand, the service of foreign registered ships and aircraft are excluded even though the service performed occurred in Canadian waters or in Canadian skies. Another exception is the case of the armed forces and diplomatic services. Canadian forces and diplomatic personnel stationed abroad are included in domestic product while the personnel of foreign countries stationed in Canada are excluded.

<sup>27</sup> Conceptually, labour income, depreciation, and unremitted profits should also be adjusted along with the interest and dividend flows. In practice, this has not been possible in the Canadian National Accounts.

<sup>23</sup> See also pages 11 and 39-40.

<sup>24</sup> One acceptable definition of production is that provided by Richard Stone who defines production as "bringing into being goods and services (or perhaps more strictly the utilities associated with these) on which members of the community or the community as a whole through its agents set a valuation". Acceptance of this definition leaves room for a number of possible interpretations concerning the levels of valuation. *The Role of Measurement in Economics*. Cambridge, 1951, pp 38-39.

6. Although it might be useful for certain purposes to obtain measures of real output corresponding to the G.N.P. concept at the industry level any such attempt is frustrated by practical and conceptual difficulties.

7. The meaning of the word Gross<sup>28</sup> when used in the term "Gross Domestic Product" denotes the inclusion of capital consumption allowances.

8. It is possible to value production within the framework of the National Accounts in a number of different ways, i.e., at different levels of valuation. One can, for instance, value economic production at factor cost net of capital consumption allowances. This concept would include the sum of salaries, wages and supplementary labour income, net income of unincorporated business, corporation profits and other investment income. Then, as noted above, one can add capital consumption allowances and similar business costs to obtain a gross concept of domestic product at factor cost. It is also possible to go further and add indirect taxes less subsidies to obtain gross domestic product at market prices. Indirect taxes are not included in the individual industry measures, however, since there appears to be no acceptable way to allocate indirect taxes by industry.<sup>29</sup>

9. Although it might be conceptually desirable for certain purposes to develop industry measures that are net of capital consumption allowances it has not yet been possible to properly isolate and quantify these data and so they are left in the industry measures. Research work is now under way in DBS on the preparation of estimates of constant dollar capital formation, capital stock, and capital consumption allowances by industry using the "perpetual inventory" method. Once constant dollar capital consumption allowances are available by industry, users could, if they so desire, make adjustments to the industry output measures.

10. The market price concept is not used since indirect taxes less subsidies must be added to the industry measures to obtain G.D.P. at market prices and this is neither desirable nor possible. The omission of indirect taxes less subsidies from the industry measures places each industry on a comparable valuation basis, in that the cost of primary inputs only (factor costs plus capital consumption

allowance) is considered. The inclusion of indirect taxes could invalidate some industry-oriented studies such as productivity, capacity and resource use; industry measures that are invariant to unevenly applied taxes are most useful for economic analysis.

11. As a summary of the basic concept of production used in the industry real output estimates the following three paragraphs are taken from *National Accounts Income and Expenditure 1926-1956*, page 105, paragraphs 24, 25 and 26:

"At any moment of time an economy possesses certain natural resources, a labour force of a given size, accumulated technological and entrepreneurial knowledge, and goods produced in past periods and accumulated for future consumption or as a means of producing future goods and services. An important measure of the level of economic activity is the quantity of goods and services that are produced by an economy during a period of time with its given resources.

"While to many people the idea of production is restricted to the activities of a manufacturing plant, a mine, or a farm, to the economist any process that creates value or adds value to already existing goods is production. Thus, while the transformation of raw materials into finished goods is obviously production, the transportation of these goods from the factory to the market where they can be sold is also production. The distribution of these goods through wholesale and retail trade channels to the user adds value since goods which were inaccessible to the user now become available. Production may also occur which has little, if any, connection with goods. The services provided by a physician or lawyer and the entertainment of an actor all create value and are therefore production.

"The use of value as a criterion permits comparison of the relative amounts produced by different types of production and provides a measuring rod by means of which heterogeneous goods and services can be added together and expressed as a value total. It also follows that each item entering into the value of production total is capable of being expressed in terms of a physical volume component and a price component."

12. In deriving G.D.P. at factor cost in current dollar terms, at the industry level, it is possible to proceed in two different ways. This aggregate may be obtained by summing the factor costs and capital consumption allowances of each individual industry. It may also be obtained by subtracting intermediate input costs (use of purchased materials and non-factor services) from the industry's gross value of output.<sup>30</sup> In the industry approach to G.D.P. as

<sup>28</sup> The term gross is used in two senses in this report. When used as part of the terms G.N.P., G.D.P. and G.N.E. its meaning is as stated here. However when used in terms relating to the industry measures (e.g., gross output, net and gross output indexes, etc.) the term is intended to convey the meaning of an output aggregate corresponding to an industry's sales or shipments (whether of final or intermediate output) plus the change, in physical terms, of goods-in-process or finished goods inventories.

<sup>29</sup> Respondents to industrial census questionnaires in Canada are asked to report shipments or production before adding indirect taxes. Thus the total of the tax receipts as reported by federal, provincial and municipal governments would have to be allocated to industry of origin, and, within industries, to those commodities or services attracting the particular tax.

<sup>30</sup> As noted earlier the gross value of an industry's output is the value of sales or shipments adjusted for the value of the physical change in finished goods and goods-in-process inventories. This value, if summed across industries, would include duplication in that the value of individual products would be counted more than once.

measured in quantity or constant dollar terms, it is impossible to use the first approach due to the problems met in trying to obtain adequate deflators for such factor inputs as profits and other investment income. Thus, for purposes of deriving constant dollar industry indexes, the most feasible approach to the desired measure is through the subtraction of intermediate material and service inputs valued at base period prices from total or gross output also valued at base period prices.

13. In order to illustrate the basic concept of production as it applies to total domestic product and to industry of origin value measures, it might be useful to consider a particular item of production. For example, consider a television set. Further, assume that this television set has a wooden cabinet and that the set sold at retail for \$350, inclusive of taxes. In the measurement of expenditure on Gross Domestic Product this set is assumed to be sold to a consumer and would appear as a final product valued at \$350. If all the component parts of the television set were completely manufactured in Canada, then the entire \$350 would be part of domestic production as valued at market prices. If however, any component parts had been produced in another country and imported, then the domestic product aggregate would be reduced by the amount of the import value. Suppose, for instance, that the picture tube was imported and cost \$75 at port of entry. This would result in the domestic product value being reduced to \$275. Further, as noted earlier, this study is concerned with domestic production **valued at factor cost**. Therefore it is necessary to reduce the value of the television set by the amount of indirect taxes paid on it at its various stages of production. Let it be assumed that indirect taxes levied on this set amount to \$75 distributed as follows: \$10 import duties on the picture tube, manufacturers' sales taxes amounting to \$10, excise taxes amounting to \$50 and miscellaneous other taxes such as licences and property taxes paid by the various industries engaged in the manufacturing and distribution of the set accounting for the remaining \$5.<sup>31</sup>

14. In the following paragraphs an attempt is made to trace the remaining \$200 (retail price of \$350 less imports worth \$75 and indirect taxes of \$75) which would correspond to the concept of G.D.P. at factor cost used in the industry approach. The television set had its start in Canadian primary industries. The forestry industry would have contributed some value in providing logs for the manufacture of the wooden cabinet. The forestry industry's contribution would be equal to the value of the wood sold (exclusive of indirect taxes) for the manufacture of the cabinet less the cost of the intermediate goods and services used in producing this bit of wood. The wood going into the cabinet would flow through a number of industries, each of which would add some further value (factor costs). Various primary costs

such as wages and salaries, profits and depreciation would have been incurred along the way which, in total, would be equal to the factor cost (at the manufacturing plant) of the television cabinet. The cabinet, in various stages of fabrication and processing, would probably have gone through a saw-milling plant, a veneer and plywood establishment, a furniture plant, and in addition, various service industries would have been involved in such activities as transporting, storing and insuring the cabinet.

15. The television chassis too would have started in the form of a number of basic materials originating with various primary industries. The iron ore industry would have been the starting point for many of the steel-using components. A copper mine would have made its contribution through the provision of that basic metal. Similarly, other primary and secondary industries would have contributed some added value to the product. It would be difficult to trace the contribution of all the industries concerned with the manufacture of the television chassis' component parts. It is safe to say that a large number of industries would have added value to it.

16. Once the completed television set emerges from the factory as a finished unit a number of other industries are still concerned with it and will add value to it. In this particular example, it is probable that a sizable portion of the domestic product value (factor cost) or net value added will be added by the service industries subsequent to the completion of the manufacturing stage. These industries would include wholesale and retail trade, transportation (including local delivery services), insurance, telephone, advertising agencies, warehousing, banking and other financial services, and many more. Each of these would contribute in some way to the final value of the product. Each would add some value in the form of primary input costs.

17. The above example<sup>32</sup> tracing the valuation of a product through its various stages of production by means of the industry of origin approach is a lengthy and complex one. It should however be clear that production can be measured in two different ways and that, in theory, both approaches yield the same result.

18. In the industry of origin approach, it is not possible (except in a very few industries) to trace, on an industry-by-industry basis, the value added to a particular commodity or service output without certain simplifying assumptions. Generally, each industry produces a variety of products and services and individual plants are so organized that many intermediate inputs cannot be assigned to specific products or processes. It is possible, therefore, to derive gross domestic product at factor cost (sometimes called net value added) at the industry level but not for individual industry products.

<sup>31</sup> The breakdown of indirect taxes is given here simply to illustrate the difference between market price and factor cost valuation. Indirect taxes are not included in the factor cost concept of production used in this work.

<sup>32</sup> For another example see *Canadian Political Science Journal* pages 60-62 of Vol. XX, No. 1, Feb. 1954 "Measurement of Real Output" by V.R. Berlinguette.

19. In the example of the television set, only one assumption concerning its disposition in the final demand category approach was made. A television set produced in the manner stated could show up in a number of other final demand categories. In most of these, as for example, if it were purchased by a government, by a service industry such as a barber shop for customer convenience (a capital expenditure by the barber shop) or a foreign nation, the contribution of the various industries would be exactly the same.

20. If the television set were to be held in inventories (also an expenditure category) in any form or at any stage of the production process, however, the value of domestic production should be measured up to that stage of its production only. That is, if a television set were purchased by a retail store and not sold in a particular time period, then no production or value added should be shown as accruing to the retail industry until the set was sold. Thus, where production results in inventory accumulation this production should be valued at cost to that point. Any subsequent value addition (or loss) would be added<sup>33</sup> or deducted at the time of the final sale (or write-off). Primary input costs would, of course, be incurred by the inventory holder but these would be offset by being charged against profits.

21. The current dollar value of production for each particular industry is determined by the market. The cost of intermediate material and service inputs as well as the factors of production (with the exceptions of entrepreneurship and risk capital) have to be paid for as they are acquired. The cost of these inputs is determined by the law of supply and demand operating in the market. The return to entrepreneurship and capital is determined by the market at the time of final sale. The residual of receipts over costs is profit, but if the entrepreneur has misjudged what the market would pay for his product at the time of sale, the market will exact a penalty in the form of a loss. It should be observed that such a loss reflects negative factor income. It is therefore possible and logical if losses are large enough, to have negative production accrue at the industry level.

#### Boundaries of Production

22. Besides the domestic or geographic boundaries already discussed, there are a number of other production boundaries. The first of these is an industry boundary and for purposes of the present study the Standard Industrial Classification of establishments published in 1948 has been used. The industry of origin real product indexes cover all the industries specified in the Industrial Classification Manual.

<sup>33</sup>It is possible, using this approach, to have negative production occur if the television set is extensively damaged or otherwise cannot be sold in a subsequent time period. In such a case a deduction would have to be made and, in the absence of offsetting new production, this would result in a negative production value (both in current and constant dollar terms).

In addition, however, to what might be considered the normal output of industry, there are a number of extensions included in the industry estimates in order to match the production boundaries used in the National Accounts. These extensions take the form of imputations of a market value to a good or service that does not pass through normal market channels but which does have a reasonable market counterpart.

23. One example of such an extension is the inclusion in agricultural production of income-in-kind estimates. These income-in-kind data include the various items of farm production that are not sold but which are retained on the farm for consumption by the farmer, his family and paid workers. This imputation is made in order to correct for a short-circuiting of normal market transactions. In cases such as these, the farmer viewed as a consumer unit in the same way as other consumers, has in a sense, purchased (or appropriated) items of final production from himself instead of purchasing them from the normal market sources. If the farmer sold all of his production into commercial channels and then repurchased his personal requirements, such imputations would not be necessary.

24. Although an imputation is made for farm income-in-kind, the imputation is not extended to include a market value for the services produced within the farm household, nor any other household in the economy. The services of a housewife, for example, are not included within the boundaries of economic production. Similarly, a man who shaves himself does not contribute anything to economic production. However, if he were shaved in a barber shop and paid the barber for this service, economic production would have occurred and would be measured. This may appear inconsistent with the treatment of farm income-in-kind. Certainly the criterion followed in the National Accounts is production for the market but as with all general rules there are some exceptions. Many actions of individuals can be construed as having some marketable value even though no market value is created through an explicit transaction. Production boundaries must thus be drawn if consistent measures of economic production are to be prepared. Economists have developed certain conventions over the years which, although permitting some possible inconsistencies, have provided a basis for isolating and analyzing economic production. These conventions allow the analyst to measure changes in total economic production caused by industry encroachment on the services normally done within a household.

25. Another major imputation that is made is one for owner-occupied houses. The assumption here is that home-owners are in fact a business unit, renting houses to themselves. This is a convention adopted in order to make production accruing from the use of residential real estate invariant to ownership. If all persons owned their homes and therefore there was no market counterpart then the imputation may not be made. Economic production, if defined to include home ownership, would then disagree with

market-indicated production. In the industry tables shown in this paper imputed rents are included with a special real estate (rents) industry.

26. Again in line with National Accounts treatment a convention is followed in the case of public administration and defence and other non-commercial or quasi-government institutions. The reason here however is somewhat different, there being no unique way of measuring the output of public administration and defence and certain other non-commercial establishments such as those engaged in education or health services. The output of this industry area has been confined to a cost valuation measure. The term cost as used in the industry estimates pertains to primary costs and does not include intermediate goods and services purchased by public administration and defence nor non-profit institutions in order to perform their services. These intermediate inputs are reflected in the output of the industries producing them for sale to the non-commercial industry. The only primary costs included are salaries, wages and supplementary labour income. An imputation for the rental of buildings, inclusive of capital consumption allowances, is considered as intermediate input of the public sector and omitted. The imputation is re-added however and shown as originating with the "rents" component of the finance, insurance and real estate industry group which is assumed to be the industry owning the government buildings and receiving rents for them.

27. There is still a considerable amount of controversy among economists regarding the treatment of activities in public administration and defence and non-commercial institutions. Some economists argue that a market value should be imputed to government services. Others contend that some government services represent a duplication of production and thus should be omitted entirely. The position taken here is that these industries draw on the factors of production in the same way that profit-motivated commercial industries do. From a primary input point of view, it makes little difference whether a worker draws a salary of \$5,000 per annum from a chemical company or whether he draws the same salary from a government department for the same work. The resource cost to the economy is exactly the same.

28. At this stage, however, a basic point should be made. The industry of origin study is concerned with measuring volume of output using market transactions. Market values are used throughout to determine input and output boundaries. In the case of government and other non-commercial sectors of the economy it is generally not possible to place a market value on output.

29. It is true that a large number of government and non-commercial services do have market counterparts. Examples would be the employment services of the Unemployment Insurance Commission and the air-field services of the Department of Transport. Public schools have, in some areas, profit-motivated schools as counterparts in the market place. The

same is true for hospitals. However, on closer examination of many of these, it becomes clear that no meaningful units of output exist. How can the output of a commercial school be measured? Should one use student-days, students passing examinations, so much teaching effort, or something entirely different from all of these? In the case of the commercial hospital, the use of patient-days or number of cures would be inadequate as quantity measures because of quality changes, scarcity of needed hospital beds, and other difficulties. The situation is much the same throughout all these non-commercial areas. Output in quantity terms cannot be clearly defined.

30. These difficult problems have received considerable attention at DBS but final solutions have not been achieved. The treatment adopted here is an interim one: in computing the indexes for government and other non-commercial establishments output is equated to the amount of labour input valued at base period wage rates with an assumption of constant labour productivity. It is felt that until such time as a useful consensus evolves in regard to the treatment of government and other non-commercial establishments within the framework of economic production, this approach is the least damaging.

#### Index Numbers and the Industry of Origin Estimates

31. The question might be asked why the industry of origin data are presented in index form as opposed to being shown in constant dollar terms. There are a number of reasons for this. In the first place, volume indexes are generally much easier to work with in economic analyses involving comparisons of volume, price and value. Usually most of these related data are shown in index form. The second reason stems from the fact that the production indexes are based on a mixture of data, many of which suffer from some defect caused by basic data problems such as incomplete coverage or duplication. Then while these data are considered sufficiently reliable to indicate relative changes between periods of measurement, their use in comparisons of absolute levels between industries is not encouraged. It thus seems more appropriate to express the quantity series in a more abstract form than base period dollar terms imply.

32. Production indexes have been criticized as being too abstract to be meaningful and have been described as "incomplete hypothetical revaluations".<sup>34</sup> It is readily admitted that production indexes are abstractions and represent the results of complex processes and aggregations. The criticism of production indexes may stem in part from the lack of complete or accurate data which adversely affects some production indexes. It may also stem from a misunderstanding of the place of constant dollar production measures within a general framework of economic production. If production

<sup>34</sup> "The Meaning of Production Indexes" by F.B. Horner, *The Economic Record*, March, 1961.

indexes were only measures of the physical volume of specific products made or individual services rendered, then their meaning and usefulness within an aggregate concept of production would be very questionable indeed. With the use of a concept of economic production corresponding with that used for purposes of national income accounting and with the statistician's ability to approximate these desired quantity measures of output for a large number of industries, the meaning of the resultant industry indexes becomes reasonably clear. They represent a value of G.D.P. at factor cost originating by industry from which price changes have been removed. This concept of real or constant dollar output fits logically into other industry-oriented economic studies such as those concerning price, income, labour and capital. Thus, even if the meaning of production indexes can be questioned in their dual roles of level and change measurement they are useful in economic analyses.

**33.** The above defence of production indexes falls short of being conclusive by failing to discuss errors or bias that can creep into these indexes. Further, there does appear to be a dearth of economic theory for production indexes. Most production indexes however are clearly described as based on a summation of current quantities valued and combined using the average unit values of some weight-base period. What results therefore is a constant dollar series which is then indexed in terms of some reference base period. Often the weight and reference base are different but this in itself does not invalidate the resultant index. In most instances (and in particular in the case of monthly series) production indexes are based on gross output measures such as shipments, sales or products produced. When based on gross output measures only, production indexes cannot be expected to reflect anything more than changes in the rate of economic production; gross output industry indexes cannot measure, in any precise sense, the levels of production when production is defined as Gross Domestic Product at factor cost.

**34.** In order to measure properly the level of production as well as changes in the rate of production it is necessary to introduce net output quantity indexes similar to those used in this study for the historical bench-mark indexes. These can be prepared only for those industries where data availability and accuracy are adequate. Conceptually net output indexes should be derived by deducting from constant dollar gross output (shipments or sales adjusted for finished goods and goods-in-process inventory change) the sum of purchased intermediate materials and services (raw materials, fuel, electricity, transportation, insurance, etc.) also expressed in terms of the dollars of the chosen base period. In practice, in Canada, the net output indexes that have been prepared still contain intermediate service inputs.

**35.** The conceptual meaning of the net output constant dollar measures is more difficult to comprehend than that of gross output measures described above. The net output series is simply the difference between the constant dollar gross output

and the constant dollar intermediate input series; constant dollar net output can also be thought of as a net value series from which price changes have been removed. It should not be thought of in terms of a constant dollar equivalent of work done since this implies so much activity without necessarily relating this activity to the creation of market value.

**36.** There is at least one stumbling block to the acceptance of net output constant dollar measures that requires noting here. If base period unit value weights are not representative of the time period covered it is possible, through the mechanical application of formulae, to obtain misleading results and in extreme cases, negative constant dollar net output. Such an occurrence is clearly unacceptable if due to faulty weighting and in such a case a different weight-base period is required. If a negative result is due to the write-off through damage (or adverse market conditions) of previously produced products it must be accepted as meaningful. One of the most important advantages of constructing a net output index for an industry is the amount of additional analysis that can be brought to bear on the index. Such analysis, if carefully done, can greatly reduce the possibility of significant error and prevent misleading results.

#### **Interpretation of the Concept of Production at the Industry Level**

**37.** A clear understanding or knowledge of individual industries and their contribution to economic production is necessary to the proper measurement of the concept of production at the industry level. To state that the concept to be measured is Gross Domestic Product at factor cost originating by industry does not in itself provide those engaged in measuring the volume of output with sufficient information to derive meaningful output measures for each industry. It is of course clear that factor costs and capital consumption allowances originating in an industry will sum to Gross Domestic Product at factor cost in current dollar terms. In attempting to remove price change from this industry aggregate, however, the statistician is faced with the task of isolating price and volume. Normally, through the use of the double deflation method, it is possible to deflate gross output and intermediate input values to derive the desired net output quantity series. This is because units of output are usually clearly defined in the market and corresponding prices can be obtained. In some industries, however, this is not the case. The problem is particularly acute in the service-producing industries.

**38.** The task of isolating quantity and price movements in many service industries is handicapped both by interpretative problems and by price data. Price indexes prepared in DBS pertain for the most part to commodities<sup>35</sup> although a number of services are priced for purposes of the Consumer Price Index.<sup>36</sup> These service prices, however,

<sup>35</sup> *Industry Selling Price Indexes, 1956-59*, DBS Catalogue No. 62-515 and *Prices and Price Indexes, 1949-1952*, DBS Catalogue No. 62-501.

<sup>36</sup> *The Consumer Price Index for Canada (1949=100)*, DBS Catalogue No. 62-518.

generally pertain to items of personal consumption and not to business services. For example railway passenger fares would be priced, but no attempt is made to collect price data pertaining to railway freight. Then many other important business services such as banking and advertising are not priced at all due in part at least to the severe definitional problems in these areas.

### Quality Changes

39. In an attempt to isolate quantity and price movements the problem of defining quality change must be resolved. Quality changes (viewed as quantity changes) can take a number of different forms. As one example of quality change consider a series showing the number of refrigerators produced. This number series can hide any structural changes that have occurred such as a shift from small to large refrigerator units. Differences in volume due to such shifts can be described as quality changes. These can be reflected in an output measure through the deflation of the output value by a currently weighted price index. It is also possible to measure these quality changes by using a volume measure which combines the quantum array of refrigerators with appropriate base year unit values. If the quantum data are complete (in that each type of refrigerator is isolated) then results obtained by combining these quantum series will be identical to a properly deflated value series. In other words, both direct quantity measurement techniques and deflation techniques can adequately measure group structural or quality changes if complete quantity and value detail are available. Anything less than complete detail will result in some uncertainty as to the adequacy of either approach.

40. Quality change arising from a specific commodity being changed through a change in a component part cannot be handled nearly as well in practice. An example of this would be a change in the physical components of a refrigerator that is changed from a standard 8.0 cu. ft. model to a 9.0 cu. ft. model. At DBS a measure of quality change is attempted by adopting a convention: a comparison is made of the direct current period quantities of both labour and material inputs of the new model with that of the old.<sup>37</sup> If the actual price of the new refrigerator coincides with the price equivalent estimated using the convention, then it would be assumed that no price change occurred even though the actual values of the two contiguous price quotations were not the same. Where such differences exist they are quantity (quality). Because of the difficulties of allocating overhead or fixed costs to individual items of output these costs cannot be incorporated in the comparison. It is thus quite possible that these quality adjustments can lead to error in the price indexes wherever the relationship of direct labour and material costs fails to move

with market prices.<sup>38</sup> Direct quantity measures (quantity multiplied by base year average unit values), even those derived from using a complete array of quantum data, would also run into difficulty measuring this type of quality change because of the fact that the new model would not have a base year unit value. In incorporating a new product or changed product such as the changed refrigerator, a base year unit value would have to be estimated or the change ignored. Thus, no matter how careful a statistician may be in handling this type of quality problem, there is always a distinct possibility that distortion will remain in the resultant quantity and/or price indexes.

41. Quality change may also take the form of extrinsic quality change. The extrinsic quality change has its roots in society's subjective attitude by appealing to consumer tastes and can vary much in importance. An example of such a change would be the case where a product such as a refrigerator was altered in appearance only in order to appeal to consumers. The refrigerator might incorporate a number of styling changes such as rounded corners, a different colour, and so on, which bear no relation to the usefulness of the refrigerator and which do not change production costs. In quantum measures one cannot take factual account of consumer satisfaction obtained in having a more pleasing appearing refrigerator. Such quality change is reflected in quantity measures only insofar as pleasing products are more apt to be produced and purchased.

42. Besides the quality change introduced by the addition of a changed physical characteristic such as the refrigerator discussed above it is possible to have quality change introduced through the addition or deletion of a service input. For example a refrigerator producer who provides some type of service (such as extended maintenance) to the purchaser of the refrigerator is in fact selling more than just the commodity itself. In such a case it might be contended that some additional quantity should be reflected in the output measure. As a general assumption the embodiment of some service inputs in the final product of an industry is probably not too amiss and some adjustment to total output for this quality change should theoretically be made. However, most service inputs do not get embodied and there is no generally accepted way of isolating these.

43. Technological advance is a major source of quality change. This change shows up in such forms as more efficient motors, better tools and equipment and improved building design. This is generally referred to as intrinsic quality change, and to date at least no method has been found to cope with it statistically. Secondary effects, such as material savings in the case of a more compact product, can be measured but this does not alter the fact that the quality change in the product itself cannot be quantified on a statistical basis.

<sup>37</sup> This measurement is deduced by comparing costs of the two inputs under the same price and technological conditions.

<sup>38</sup> See also paper given by B.J. Emery and T.K. Rymes, to the *Canadian Political Science Association's* Conference on Statistics, June, 1962, "Price Indexes in a Social Accounting Framework".

44. It should be clear from the above (and the above merely scratches the surface of this complex area) that quality change is one of the most difficult practical and conceptual problems encountered in quantity and price<sup>39</sup> measurements. Certainly any solution to this general problem can only be arbitrary and based on some convention.

#### Financial Intermediaries

45. This service industry area covers such establishments as commercial banks, life and non-life insurance companies, personal loan companies, trust companies, credit unions and investment dealers. It is conceptually difficult to perceive output in a quantity or constant dollar sense for these industries. Further, the particular institutional arrangements of some of these financial organizations make the breakdown of values into price and quantity components most difficult. Another difficulty is that money itself is dealt with and this tends to obscure the issue.

46. In order to determine the output of financial intermediaries, it is necessary to recall that economic production can be defined as the creation and sale, at a price, of goods and services. The exchange of money or claims on money, or the exchange of future money for present money, etc., are financial flows and as such represent only certain activities inherent in the process of creating economic production in these establishments. In a complex economy, these transfers of funds between and among sectors, industries, organizations and individuals require institutional arrangements which make this transfer possible. It is the function of financial intermediaries to provide this facilitating service for the flow of funds, and it is this service that constitutes the economic production of financial institutions.

47. The fact that the production of financial intermediaries has been defined does not, however, solve the problem of how this output should be measured, and particularly so in terms of constant prices. The market mechanism in this area does not provide a yardstick of measurement, since the amount of funds transferred and the price for this transfer are either quoted in one package or the distinctions are otherwise obscured. In the case of insurance, the premiums charged are a mixture of payment for the actuarial liability and a price for the insurance (exchange) function while in the case of banks the situation is obscured by the provision of "free" banking customer services.

48. When one wishes to measure the output of financial institutions at current prices, the problem is somewhat simpler, for although one cannot approach it via individual market transactions, one

can solve it via the total approach. Hence, the total costs (including profits), or the imputed gross value of banking services rendered, less materials, supplies and purchased business services constitutes a measurement of output at current prices. Since this approach avoids factoring into price and quantity, it is not susceptible to a deflation procedure in order to value output in constant dollars. The output of financial intermediaries might be estimated by projecting value added (i.e., the Gross Domestic Product at factor cost) in base period prices on the basis of those indicators which best reflect the actual performance of the exchange service functions of the particular institutions.

49. In the present study financial intermediaries are measured using primary input (mostly labour input) data.

#### Government Administration and Non-commercial Establishments

50. In the National Accounts, domestic transactors are divided into three groups "whose economic motivations and behaviour are relatively homogeneous within groups".<sup>40</sup> These are the business, government, and personal sectors. The business sector includes all transactors which operate for gain.<sup>41</sup> Such transactors sell their products and market prices are established for each of the goods and services they sell. Base-period prices therefore exist with which current output can be valued.

51. The personal sector includes not only persons, but all "private organizations which are not established for the purpose of making a gain e.g., charitable institutions, municipal hospitals, and universities".<sup>42</sup> Some of these institutions do make a charge to the individual for their services, but this charge usually falls short of covering all expenses and may not be related to the specific service rendered in each case. Moreover, such institutions are motivated differently than are business enterprises: they do not operate primarily for gain. Similarly, establishments in the government do not operate for gain.

52. If institutions such as municipal hospitals are to be treated in a manner similar to business sector establishments their revenue from charges made to the individual purchaser for each service rendered would have to be factored into price and quantity components for real output analysis. In the case where charges do not cover expenses a loss would be recorded, thus reducing the Gross National Product.

<sup>40</sup> DBS *National Accounts, Income and Expenditure, 1926-1956* p. 117.

<sup>41</sup> The business sector includes government business enterprises which, although not primarily established to make a gain, are operated by their directors as if they were profit-oriented. Their motivation is therefore similar to that of private business enterprises.

<sup>42</sup> *Ibid.* p. 117.

<sup>39</sup> See paper by Zvi Griliches, "Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change", *National Bureau of Economic Research, Inc.*, 1961.

53. Institutions in the personal sector and institutions in the government sector (such as municipal schools) which do not make a charge to the individual for services are considered to have no transactions which define uniquely the service being purchased. A statistician might be able to make a subjective decision as to what the product is and could then value it at base-period cost for real output measurement purposes. If he does this, however, he is faced with the problem of determining the cost of each product or service in order to allow for changes in the composition of services rendered. It can be seen that this search for unique quantity measures of output for non-commercial institutions founders on the fact that since these institutions do not sell their services the result of the use of primary input is not evaluated in the market place. Since output is not evaluated it cannot be measured and thus a cost convention is used. Such a convention of course has limited meaning.

54. In the case of non-commercial establishments it was decided that the industry of origin indexes should follow the same concepts as those laid down for the current dollar National Accounts series. Further, the industry real output estimates should be kept conceptually consistent with the deflated final expenditure category results. "Thus as far as possible the boundaries and definitions established for the current dollar [Gross Domestic Product at factor cost as defined in the National Accounts] series govern throughout".<sup>43</sup>

55. In the National Accounts the contribution to gross domestic product of public administration and defence as well as other non-commercial establishments is measured by factor costs. This embraces salaries, wages and supplementary labour income only. In the case of certain non-profit motivated institutions such as public<sup>44</sup> hospitals, labour costs are again used but data pertaining to depreciation and similar business costs are added. In the deflated final expenditure categories approach the above factor costs are used as well as the deflated value of all purchased materials and services. These latter, in the industry of origin approach, are not included in the non-commercial industry index since to do so would cause duplication; these inputs are measured as products of the industries producing them.

56. The procedure of deflating labour costs to get at the real movement of public administration and defence and other institutional services leaves much to be desired but, all told, it appears preferable to the available alternatives. It can be argued of course, that, in certain instances, more meaningful output indicators could be found. However, to search for and use such indicators could very easily lead to inconsistencies and implied measurements of vague concepts such as effort or utility rather

than "production". In view of the paucity of the available statistics and the intangible nature of the concepts involved, it is an open question whether any deviations from the factor cost (of labour) approach are worthwhile at the present time.<sup>45</sup>

#### **Paid and Imputed Rents Received by Persons and Imputed Rents on Government Buildings**

57. The process of renting is an economic activity and net rents plus capital consumption allowances may be reflected in a separate industry or be implicitly included with profits and capital consumption allowances of many other industries. Net rents originate with owners as a return for risk and capital just as profits reflect the return to risk and capital. Rental activity often takes place in conjunction with other activities. In the National Accounts rental income is selected and combined with the income of those establishments exclusively in the rental business. The Canadian National Accounts classify rents in the following manner:

- (i) Rents received by incorporated companies are considered to be part of revenue while rents paid are considered to be intermediate business costs. Thus profits (including net rents), salaries and wages, and capital consumption allowances pertaining to owned assets are contained in the primary input data of the owning industry.
- (ii) Rents received by unincorporated business are separated from operating business revenue and excluded from the industry to which the businesses are classified. Rent paid is an operating expense and is deducted from revenue. In the Canadian National Accounts, primary inputs associated with the receipt of rents by unincorporated businesses are classified to a separate rental industry in the finance, insurance and real estate group along with imputations on owner-occupied dwellings.
- (iii) A special imputation is made for government buildings. This imputation includes both net rents and capital consumption allowances and was classified, for national accounting purposes to the "other services" industry group. In the industry of origin indexes these imputations were removed from the above group, deflated and then added to the rental component of the finance, insurance and real estate group.
- (iv) All other rents, that is, other paid commercial and residential rents, as well as imputed residential rents along with facility and garage rentals, and the capital consumption allowances associated with all of these, are considered to originate in the rental industry noted in (ii) and (iii) above.

58. In the industry of origin indexes, all rents, with the exception of rents received by corporations, are classified to a rents component of the finance, insurance and real estate industry division.

<sup>43</sup> Statement by S.A. Goldberg at the *Fourth Conference of British Commonwealth Statisticians, London, Sept. 17-28, 1956. Summary of Proceedings.*

<sup>44</sup> The term "public" is used to imply use by the public. No connotation of ownership is meant.

<sup>45</sup> S.A. Goldberg, *op. cit.*



## PART IV

METHODS USED IN PREPARING THE INDUSTRY INDEXES



## PART IV

### Methods Used in Preparing the Industry Indexes

#### Introductory Note

59. No reference document for statistical data would be complete without a description of the methods used in preparing the data. This part attempts to do just that but it should not be viewed as encompassing all the relevant points (or even all the relevant major points) that might be discussed. In the following paragraphs various technical aspects of the indexes are discussed, some more thoroughly than others perhaps. Quantity indexes presented herein express production occurring in a given quarter or year in terms of the dollars of a base year; they represent given year production values that have been revalued in terms of constant dollars.

60. In addition to methods required to prepare the basic data in index number form the quarterly indexes in particular required other types of processing to make them more useful. These processes are also discussed in the following paragraphs.

#### Formulae Used

61. The formulae used in the preparation of the industry-of-origin indexes of real G.D.P. at factor cost are of the base-weighted Laspeyres type. Such indexes permit the comparison of production movements between all time periods (whether monthly, quarterly or annual) for any series that has one common weight base. Where departures from the basic formulae had to be made the description of individual industry indexes in Appendices B and C will implicitly warn the index user. It should be noted that Formula I and Formula II below lend themselves to a double deflation approach to a net output index. Formula I uses, in effect, a currently weighted average unit value deflator for both output and intermediate input while Formula II depends on more precisely constructed price indexes. The term double deflation applies to both formulae and simply means that output and intermediate input are separately expressed in the dollars of the base period and the net output aggregate is obtained by subtraction.

62. In constructing the individual annual or benchmark industry indexes, where comprehensive annual or other periodical survey data were available, the form of the Laspeyres formula used was that of a relative of aggregates in which base period unit values in the industry were used to fix the relative importance of each unit of gross output and intermediate input. In other words constant dollar G.D.P. (or added value) was determined for the current period and was compared with constant dollar G.D.P. as determined for the base period. The algebraic expression of this basic formula<sup>46</sup> is as follows:

<sup>46</sup> See Table IV, *Revised Index of Industrial Production, 1935-1957* for an example of worksheet set-up, based on the breakfast foods industry.

$$\text{Formula I: } \frac{\sum Q_1 P_0 - \sum q_1 p_0}{\sum Q_0 P_0 - \sum q_0 p_0}$$

in which Q and P stand for the quantities and average base period unit prices of products, q and p stand for the quantities and average base period unit prices of intermediate inputs, '1' stands for the current time period and '0' for the weight-base period.

63. A variation of the above formula was used in a few instances where only value data and related price indexes were available. This formula is as follows:

$$\text{Formula II:}^{47} \frac{\frac{\sum Q_1 P_1}{\sum Q_1 P_0} - \frac{\sum q_1 p_1}{\sum q_1 p_0}}{\sum Q_0 P_0 - \sum q_0 p_0}$$

It can readily be seen that, mathematically, the above formula (II) reduces to formula (I). This equality however is not as easily attained as the formulae imply. In order to yield identical results both quantity and price data must be complete. Insofar as coverage is incomplete, (that is, prices are not available for all quantities, or quantities are not available for all values), then some uncertainty concerning the resultant indexes will exist. In the case of the quantity indexes thus derived the assumption is made that the price of uncovered items (i.e., for which there are no usable quantity data to correspond to reported values) moves with the implicit price of those items for which consistent quantity and unit value data are available.

64. Although the above formulae (I) and (II) will yield what is considered to be the most desirable output measures of G.D.P., practical data problems and deficiencies often made their complete usage impossible. In such cases it was necessary to use either the gross output measure alone without deducting intermediate input, or as in a few instances, the measure for intermediate input (materials, fuel and electricity used) alone. Where neither a gross output nor intermediate input measure was possible the industry index would be based on some less desirable data such as employment or man-hours.

<sup>47</sup> The deflation of a current value with a currently weighted price index (normally referred to as a Paasche price index) results in a base-weighted (constant dollar) index as shown in Formula I. Wherever it was necessary to use deflation methods and base-weighted Laspeyres price indexes in this study, this deflation was done at the finest level of detail, thus yielding an approximation to a true Laspeyres quantity index.

65. In the case of the current monthly or quarterly indexes the product portions of the formulae only were used since no intermediate input data are available on a current basis.

66. In combining individual industry indexes into major groups and sub-groups, the form of the Laspeyres formula adopted both for the annual and monthly or quarterly indexes was that of an arithmetic average of relatives in which G.D.P. at factor cost originating in the weight-base period was used to represent the relative importance of each industry. This formula is expressed as follows:

$$\text{Formula III: } \frac{\sum \left( W \frac{q_1}{q_0} \right)}{\sum W}$$

In this formula, W represents Gross Domestic Product at factor cost originating in each covered industry

in the weight-base period expressed as a percentage of total G.D.P. and  $\frac{q_1}{q_0}$  represents the index of production in each industry.

67. By using Formula III the contribution of each industry component series can be isolated in terms of points to the total index and the series can be combined into any desired composite. Point contribution studies are of special importance in the interpretation and analysis of aggregate indexes. Percentage distribution of the component indexes (in reality constant dollar industry aggregates in time series form) must however be used with care since all they really demonstrate are the rates at which the various components of the aggregate are changing. If base-period weights are changed then point contributions are changed. Thus this type of analysis should not be construed as equivalent to structural analysis.<sup>48</sup>

<sup>48</sup> See also Part I, page 14.

**Sample of Worksheet Procedure for Combining Industry Indexes with Base-year Weights**  
(Goods-producing industries)

	1946	1949	1961
<b>Agriculture:</b>			
1. Quantity index, <sup>1</sup> 1949 = 100 .....	109.4	100.0	116.0
2. Weighted index, (1) x 10.714 .....	1172.1116	1071.4000	1242.8240
<b>Forestry:</b>			
3. Quantity index, <sup>1</sup> 1949 = 100 .....	103.1	100.0	130.8
4. Weighted index, (3) x 2.108 .....	217.3348	210.8000	275.7264
<b>Fishing and trapping:</b>			
5. Quantity index, <sup>1</sup> 1949 = 100 .....	87.1	100.0	115.7
6. Weighted index, (5) x 0.540 .....	47.0340	54.0000	62.4780
<b>Mining:</b>			
7. Quantity index, <sup>1</sup> 1949 = 100 .....	74.3	100.0	266.9
8. Weighted index, (7) x 3.245 .....	241.1035	324.5000	866.0905
<b>Manufacturing:</b>			
9. Quantity index, <sup>1</sup> 1949 = 100 .....	85.2	100.0	153.0
10. Weighted index, (9) x 27.340 .....	2329.3680	2734.0000	4183.0200
<b>Construction:</b>			
11. Quantity index, <sup>1</sup> 1949 = 100 .....	68.4	100.0	168.4
12. Weighted index, (11) x 6.379 .....	436.3236	637.9000	1074.2236
<b>Electric power and gas utilities:</b>			
13. Quantity index, <sup>1</sup> 1949 = 100 .....	79.4	100.0	317.7
14. Weighted index, (13) x 1.646 .....	130.6924	164.6000	522.9342
<b>Other goods-producing industries n.e.c.:</b>			
15. Quantity index, <sup>1</sup> 1949 = 100 .....	96.1	100.0	141.4
16. Weighted index, (15) x 1.108 .....	106.4788	110.8000	156.6712
17. Weighted indexes (2) + (4) + (6) + (8) + (10) + (12) + (14) + (16) .....	4680.4467	5308.0000	8383.9679
18. Index of goods-producing industries, <sup>1</sup> 1949 = 100, (17) ÷ 53.080 .....	88.2	100.0	157.9

<sup>1</sup> See Table 1.

**Note:** Most of the major group industry indexes shown are also aggregates of component industry indexes. It is necessary to derive quantity indexes for individual industries first, then for sub-groups, major groups or divisions, and finally, for the output of the entire economy. In order to take account of the relative importance of industries the individual industry indexes are weighted, as in the above example, with their percentage contribution to total G.D.P. at factor cost in the base weight period. The indexes for individual industries are thus multiplied by their weight, the result summed and the aggregate divided by the sum of the percentage weights for the individual industries being combined. In the above example the output index for agriculture (line 1) is multiplied by the percentage weight for agriculture (10.714) to yield a weighted index series (line 2). This weighted index is then added to the weighted indexes for the other industries to be combined to yield a total as in line 17. This total is then divided by the sum of the industry weights (10.714 + 2.108 + 0.540 + ..... = 53.080 in above example) to yield the aggregate index (line 18).

68. The use of fixed weights throughout a period of years in effect maintains the industrial price structure which existed in the weight-base period. It may be argued that such a structure may soon become out of date, as the relationship of individual prices within industries and between industries may be shifting. These shifts are usually not significant over a short span of time but, as the weight base becomes more remote, they can seriously affect the accuracy of the quantity index.

#### Base Periods

69. The industry volume indexes shown in this report are on a 1949 reference base period. Two weight-base periods are used however, thus follow-

ing the same approach adopted for the Index of Industrial Production. The weight-base period 1935-39 is used for the period 1935-46 while a 1949 weight-base period is used for the years 1946-61 inclusive.

70. The industry indexes were linked individually in the year 1946 in order to yield continuous index series from 1935-61 on a 1949 reference base. Industry aggregates or group totals were also individually linked in the year 1946. This means that the composite index is internally consistent from 1935 to 1946 and from 1946 to 1961.

Sample of Worksheet Procedure for linking 1935-39-Based Indexes  
with 1949-Based Indexes  
(Goods-producing industries)

	1945	1946	1947	Percentage weights 1949 (1935-39)
Agriculture .....				10.714 (10.725)
1. Quantity index, 1935-39 = 100 .....	94.5	109.0		
2. Quantity index, 1949 = 100 .....		109.4	102.8	
3. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	94.8	109.4	102.8	
4. Weighted index, (1) x 10.725 .....	1013.513	1169.025		
5. Weighted index, (2) x 10.714 .....		1172.112	1101.399	
Forestry .....				2.108 (1.404)
6. Quantity index, 1935-39 = 100 .....	137.1	151.2		
7. Quantity index, 1949 = 100 .....		103.1	118.7	
8. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	93.5	103.1	118.7	
9. Weighted index, (6) x 1.404 .....	192.488	212.285		
10. Weighted index, (7) x 2.108 .....		217.335	250.220	
Fishing and trapping .....				0.540 (0.532)
11. Quantity index, 1935-39 = 100 .....	116.4	115.8		
12. Quantity index, 1949 = 100 .....		87.1	81.0	
13. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	87.6	87.1	81.0	
14. Weighted index, (11) x 0.532 .....	61.925	61.606		
15. Weighted index, (12) x 0.540 .....		47.034	43.740	
Mining .....				3.245 (5.329)
16. Quantity index, 1935-39 = 100 .....	100.9	97.1		
17. Quantity index, 1949 = 100 .....		74.3	78.5	
18. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	77.2	74.3	78.5	
19. Weighted index, (16) x 5.329 .....	537.696	517.446		
20. Weighted index, (17) x 3.245 .....		241.104	254.733	

See footnote at end of table.

**Sample of Worksheet Procedure for linking 1935 - 39-Based Indexes  
with 1949-Based Indexes - Concluded**  
(Goods-producing industries)

	1945	1946	1947	Percentage weights 1949 (1935 - 39)
<b>Manufacturing</b> .....				<b>27.340</b> <b>(24.242)</b>
21. Quantity index, 1935 - 39 = 100 .....	206.4	189.2		
22. Quantity index, 1949 = 100 .....		85.2	93.2	
23. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	92.9	85.2	93.2	
24. Weighted index, (21) x 24.242 .....	5003.549	4586.586		
25. Weighted index, (22) x 27.340 .....		2329.368	2548.088	
<b>Construction</b> .....				<b>6.379</b> <b>(3.697)</b>
26. Quantity index, 1935 - 39 = 100 .....	136.4	169.9		
27. Quantity index, 1949 = 100 .....		68.4	79.7	
28. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	54.9	68.4	79.7	
29. Weighted index, (26) x 3.697 .....	504.271	628.120		
30. Weighted index, (27) x 6.379 .....		436.324	508.406	
<b>Electric power and gas utilities</b> .....				<b>1.646</b> <b>(2.395)</b>
31. Quantity index, 1935 - 39 = 100 .....	169.4	177.8		
32. Quantity index, 1949 = 100 .....		79.4	89.8	
33. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	75.7	79.4	89.8	
34. Weighted index, (31) x 2.395 .....	405.713	425.831		
35. Weighted index, (32) x 1.646 .....		130.692	147.811	
<b>Other goods-producing industries n.e.c.</b> .....				<b>1.108</b> <b>(1.177)</b>
36. Quantity index, 1935 - 39 = 100 .....	155.8	153.4		
37. Quantity index, 1949 = 100 .....		96.1	93.6	
38. Quantity index, <sup>1</sup> linked in 1946, 1949 = 100 .....	97.6	96.1	93.6	
39. Weighted index, (36) x 1.177 .....	183.377	180.552		
40. Weighted index, (37) x 1.108 .....		106.479	103.709	
41. Weighted indexes (4) + (9) + (14) + (19) + (24) + (29) + (34) + (39)....	7902.532	7781.451		
42. Quantity index of goods-producing industries 1935 - 39 = 100 (41) ÷ 49.501 .....	159.6	157.2		
43. Weighted indexes (5) + (10) + (15) + (20) + (25) + (30) + (35) + (40) ..		4680.448	4958.106	
44. Quantity index of goods-producing industries 1949 = 100, (43) ÷ 53.080		88.2	93.4	
45. Quantity index of goods-producing industries, <sup>1</sup> linked in 1946, 1949 = 100	89.5	88.2	93.4	

<sup>1</sup> See Table 1.

**Note:** If only one industry index is to be linked, (see line 3 in above table) the procedure is to multiply each 1935-39 based index for the period 1935 to 1945 by the factor obtained by dividing the 1949-based index for 1946 by the 1935-39 based index for 1946. This gives a continuous index on the 1949 base. If a number of indexes are to be combined and the group total linked, the procedure is to combine the 1935-39 based indexes with 1935-39 weights, for the 1935-46 period, and combine the 1949-based indexes with 1949 weights for the 1946-61 period. Again, the link is made in 1946 (see line 45 above) at the combined level as described for a single industry.

These procedures are illustrated both for a single industry, e.g., agriculture, on line (3), and for the total of goods-producing industries on line (45).

### Industry Weights

71. Gross Domestic Product at factor cost forms the basis for the weighting system used for combining the industry real output indexes. The 1949 inter-industry flow table<sup>49</sup> provided much of the basic data for such a weighting system in that year. The flow table isolated some forty individual industries or industry groups and yielded primary input values (factor cost and capital consumption allowances) for them. It was necessary however to break down these aggregates into additional component industry detail. As a result of this work it has been possible to derive (for the 1949 base at least) estimates of Gross Domestic Product at factor cost originating in some three hundred individual industries. Weights for published series, expressed in percentage form, are shown in Table 5, Part VI (Statistical Tables) of this report.

72. In breaking down the inter-industry flow table totals it was necessary to exploit fully the industry detail available within DBS as well as to draw on certain outside sources such as the Departments of National Revenue and Transport. Salary and wage data were obtained from the various data collecting divisions within the DBS, although most of the necessary detail was made available by the Labour Division. Sub-industry detail for corporation profits, investment income and net income of unincorporated business and capital consumption allowances had to be estimated from a variety of sources including taxation records, company reports and operating results surveys. Inventory valuation adjustments and other such miscellaneous adjustments were obtained from national income accounting worksheets. Where all these more obvious sources of additional industry detail failed to provide the necessary information to break down an industry aggregate alternative methods were used. In the case of manufacturing, for example, census value added was used to estimate sub-industry weights. In the case of some of the service industries, it was necessary to use either revenue or labour force data from the 1951 Census of Merchandising and Services. It is felt that the resultant weights (that is the allocation of Gross Domestic Product to industry of origin) are sufficiently accurate to avoid significant biases in the composite quantity index.

73. There are three major differences between the Gross Domestic Product originating data used in the industry weighting system and that shown in the 1949 inter-industry flow table. One of these differences has to do with the inclusion in the construction industry in the flow table of all new and repair construction regardless of what industry performed this work. In the industry real output weighting system primary inputs associated with repair construction by "own" labour force are left in the industry doing the repair work. Another difference lies in the isolation in the real output

system of non-ferrous metal smelting and refining from mining. In the inter-industry table groups, the non-ferrous metal smelting and refining industry is grouped with non-ferrous metal mining instead of manufacturing. Also, the inter-industry flow table includes manufacturing repair industries within the manufacturing group to which they are classified in the Standard Industrial Classification. The industry output measures depart from the standard industrial classification and the inter-industry flow table by grouping these repair industries together as a separate group under "Other Goods-producing Industries" (see Table 1). This was done for two reasons. In the first place, the manufacturing components of the Index of Industrial Production exclude manufacturing repair industries and it was felt that the manufacturing index used in the official Index of Industrial Production should be left intact within the framework of overall real output. If the repair industries were added there would in effect be two aggregate measures of manufacturing output published and this could only cause confusion. Further, the revised *Standard Industrial Classification Manual* classifies most of these manufacturing repair industries to various service industries and therefore the treatment given them here can be considered as a step towards the new classification system.

74. The 1949 values of Gross Domestic Product at factor cost by industry of origin used in the industry weighting system correspond to the published national accounts value for 1949 for Gross Domestic Product at factor cost. These data can be reconciled at the total level only and not at the industry level. The difficulty lies in the mixture of classifications used in the national accounting worksheets. As previously noted, certain industry data such as salaries and wages, are collected and tabulated on an establishment basis. On the other hand, other primary inputs such as profits, investment income and capital consumption allowances are obtained and tabulated on a company or enterprise basis. This means that multi-establishment companies are classified in total to the industry of major activity. For purposes of the inter-industry flow table and the industry real output weighting system, it was necessary to break down company profit and other data to obtain establishment or "industry" detail. The method used together with the problems encountered in breaking down company data are described in the inter-industry flow reference paper.<sup>50</sup>

75. The weighting system used in the Index of Industrial Production is identical to that just described with the exception of minor data revisions.<sup>51</sup> Thus the industry components of the Index of Industrial Production fit, in a consistent manner, into the overall industry real output composite. Since the Index of Industrial Production was

<sup>49</sup> *The Inter-industry Flow of Goods and Services, Canada, 1949, and Supplement to Reference Paper No. 72, DBS Catalogue No. 13-513.*

<sup>50</sup> *Ibid*, pages 45-47.

<sup>51</sup> See pages 17, 18 and 19 of *Revised Index of Industrial Production, 1935-1957, DBS Catalogue No. 61-502.*

rebased to a 1949 base period, a number of data revisions were made to the national accounts and to the inter-industry flow table. These revisions have been incorporated into the industry weighting system with the exception of revisions made to Index of Industrial Production components. This decision was based on the fact that data revisions made within this industry area were not significant. It was considered undesirable to revise the published 1949-based Index simply to incorporate minor weighting changes.

76. The 1935-39 weighting system could not be refined in the same manner as that for 1949 due to the absence of an inter-industry flow table and to other data gaps. In general, it was necessary to use much cruder data in isolating gross domestic product at factor cost at the industry level. It was only possible to estimate some of the larger adjustments that needed to be made to the primary input data for companies crossing industrial lines. By using company financial statements along with establishment salary and wage data, company profits and depreciation allowances were assigned to the establishments of the company operating in the various industries. For example, if a company operated an establishment in manufacturing and also in mining, the salary and wage totals reported by these two establishments would be used to allocate overall company profits and depreciation allowances to manufacturing and mining. In general it was possible, using methods such as these, to obtain Gross Domestic Product estimates for major industry divisions. Internal industry detail was, in a number of instances, obtained in the same manner as for 1949. An example of this is the use of census value added within manufacturing and mining. In some areas it was necessary to use even less complete information. In the case of retail trade, operating cost data from the 1941 decennial census were used to build internal weights. These cost data failed to reflect profits although they did reflect other primary input costs. In a limited number of industry areas it was considered more desirable to use the 1949 industry breakdown of Gross Domestic Product to combine 1949-based industry volume indexes back to 1935 rather than to attempt further breakdowns of Gross Domestic Product in the earlier period. Available data in areas such as transportation and certain other services were often too incomplete to be used. The major industry division totals are, however, considered to be sufficiently accurate, (being based on various samples which were designed to obtain correct aggregate levels) to be used with confidence. These samples however, were never used or intended to be used for isolating sub-industry detail.

77. In summary then, it can be said that the 1949 weighting system is fairly complete and accurate. The 1935-39 system, on the other hand, suffers from a number of defects which have had to be circumvented by various and sometimes arbitrary methods. In spite of this, however, the weighting system in the earlier period is probably fairly accurate at the industry division level and any

distortion at the sub-industry level would be confined to only a few industry divisions. It is expected therefore, that any errors that do exist in this earlier weighting system will have little significant effect on the accuracy of the total G.D.P. index.

#### Annual or Bench-mark Indexes

78. In the preparation of composite volume of output indexes, it is generally desirable to exploit fully the available industry detail in order to ensure historical index accuracy. In the case of industry indexes, it is generally possible to take advantage of annual censuses of industry as in the case of manufacturing, mining, and transportation, or to use decennial censuses of distribution and service industries in such industry areas as retail and wholesale trade and business and personal services. Current indexes on the other hand are based on monthly or quarterly data which are generally not as complete, and over time tend to stray from the correct aggregate levels. For this reason it is important that bench-mark production indexes be based on comprehensive census records.

79. The bench-mark indexes contained in this report and shown in Part VI cover, for the most part, the period 1935-58 inclusive. A notable exception is the group of industries covered by the Index of Industrial Production. Annual bench-marks for this latter component have not been prepared since the release of the Index reference paper in 1959 and consequently are not incorporated in this report. Work is now under way in the up-dating of Index of Industrial Production bench-mark data, but it is not advanced to the point where it could be incorporated into this study. Present plans are to revise the Index of Industrial Production as soon as time and resources permit in order to include up-dated bench-marks and tie the Index into the new industrial classification system. This latter task will require some reshuffling of the industry data and could not be done at this time.

80. As noted earlier an ideal bench-mark index would be constructed by deducting from the gross output of an industry all intermediate material and service inputs. In practice it has not been possible, due to a lack of data, to deduct intermediate service inputs. The best indicator that it has been possible to derive is census value added (sometimes referred to as "net output") which is simply gross output less intermediate material and fuel inputs. In the following table it is seen that some 29.6 per cent of the base year Gross Domestic Product is projected on the basis of value added indicators.

Type of bench-mark measure:	Percentage share of G.D.P. originating, in 1949
Census value added .....	29.6
Gross output .....	51.8
Material input .....	3.6
Labour input .....	15.0
<b>Total</b> .....	<b>100.0</b>

81. Gross output measures are used to represent some 51.8 per cent of 1949 G.D.P. and are thus the most common type of indicator. These measures are prepared using both deflation and quantum approaches, with no special preference attached to either. In general the approach used depends upon the type and quality of available data.

82. The labour input measures are largely confined to non-commercial industries and to service industries in the finance, insurance, real estate and business service areas. For a detailed description of these as well as the other types of indicators and the specific industries represented by each, the reader is referred to Appendix B.

#### Monthly or Quarterly Indexes

83. The industry output volume indexes are presented on an annual and quarterly basis only. However, underlying the quarterly indexes which cover the period 1946-61 inclusive are a large number of monthly series. For example, the Index of Industrial Production components, prepared and published on a monthly basis, are included in this study on a quarterly basis only. The quarterly indexes for the manufacturing, mining, electric power and gas utility industries are derived by simply averaging the three monthly index levels falling in each calendar quarter. Outside of the area covered by the Index of Industrial Production, monthly data are available for a large portion of the remaining product of the economy but not for all areas. For example, monthly data are available for most of retail and wholesale trade, transportation and federal government but are lacking for construction and parts of agriculture.

84. Data frequency and timeliness do not allow the preparation of the real output indexes on a monthly basis. Some monthly data become available promptly after the time period to which they pertain, as for example, retail sales. Other data however, become available only after several months have elapsed. To prepare monthly indexes for all those industries where monthly data are available would create a great number of problems in regard to timing and would undoubtedly require the estimation, on a continuing basis, of a considerable amount of monthly data. Furthermore, there are a number of other problems such as those relating to calendar variation encountered in preparing monthly indexes which although still serious are not as critical in quarterly indexes. By showing the industry results on a quarterly basis, problems of data errors and estimation for missing data are minimized. Thus, even though many of the indexes are prepared on a monthly basis it is felt that only quarterly indexes should be made available at this time.

85. In the table below is shown the percentage of 1949 Gross Domestic Product represented by the more common types of current projector. It is seen that gross output (production, shipment, sale or revenue) measures account, in total, for some 71 per cent. Of this about one-half is based on physical

unit measures while the other half is based on deflated value measures. Some 22 per cent is represented by labour input data. Of this latter group 11 percentage points consist of man-hour data adjusted for output per man-hour trends (see paragraph 90 below) while the remainder consists of unadjusted labour input and is mainly confined to the non-commercial industry sector. A complete description of the quarterly indicators by industry is given in Appendix C.

Type of current measure:	Percentage of 1949 G.D.P. represented
Gross output:	
Physical units .....	35
Value deflation .....	36
Labour input:	
Adjusted man-hours .....	11
Unadjusted labour input .....	11
Materials, trend, related indicator and other miscellaneous .....	7
<b>Total .....</b>	<b>100</b>

#### Adjustments for Calendar Variation

86. The United Nations Statistical Office has recommended that countries preparing indexes of industrial production publish these indexes on a weekly rate basis. This means that monthly indexes should be adjusted in order to equalize the number of working days in each month. This makes it possible to compare in a more direct way one month's output with that of any other month. The official Canadian Index of Industrial Production has been adjusted for calendar variation before seasonal adjustment and therefore both published forms of the Index include this adjustment. In preparing the aggregate industry estimates, the question arose as to whether or not these other industry output indexes should also be adjusted for calendar variation. It was decided that since the Index of Industrial Production components were to be an integral part of the study, it would be desirable to have all other industries on a basis comparable to it. As a result, calendar adjustments have been made to all other industries. It must be pointed out however that some of these adjustments are based on incomplete information and further research is required.

87. It might be suggested that since the industry real output indexes are published on a quarterly basis, it should not be necessary to adjust them for calendar variations. Tests made on the effects of calendar variation indicate that quarter-to-quarter movements of individual industry indexes can be affected by as much as three per cent by calendar variations. In the following table calendar adjustment factors are shown for an industry with a five-day working week. The adjustments required to the fourth quarter of 1958 and the first quarter of 1959 result in a three per cent change to the basic reported data. It was felt that this margin of error

**Calendar Adjustment Due to the Number of Working Days**  
(Industries working a five-day week)

	Number of working days	Adjustment factor <sup>1</sup>
1958:		
1st quarter .....	64	98.1
2nd quarter .....	65	99.6
3rd quarter .....	66	101.1
4th quarter .....	66	101.1
<b>Averages</b> .....	<b>65.25</b>	<b>100.0</b>
1959:		
1st quarter .....	64	98.1
2nd quarter .....	65	99.6
3rd quarter .....	66	101.1
4th quarter .....	66	101.1
<b>Averages</b> .....	<b>65.25</b>	<b>100.0</b>
1960:		
1st quarter .....	65	99.6
2nd quarter .....	65	99.6
3rd quarter .....	66	101.1
4th quarter .....	65	99.6
<b>Averages</b> .....	<b>65.25</b>	<b>100.0</b>

<sup>1</sup> Original data indexes are divided by this factor.

was far too great and therefore calendar variation adjustments were undertaken in all industries. It is considered unlikely however that this adjustment, although significantly affecting individual industries, would have a significant effect on the G.D.P. aggregate.

88. Calendar variation can be caused by a number of factors. For example, the working day practices of one industry may be different from those of another industry. Some industries may work a seven-day week while others work a six-day, five and a half or a five-day week. Each of these practices will result in different adjustment factors being required to equalize the monthly time periods. Another type of calendar variation adjustment shows up in the service industries and this relates to the practice of consumers and other buyers who purchase goods and services on particular days of the week as opposed to other days. For example, in retail trade food stores, the bulk of food purchases occurs on Fridays and Saturdays. Another example is in passenger transportation services where the industries are affected by week-end travel. In cases such as these it is desirable to not only equalize working days in each month but also to equalize the number of days of a certain value for each month. It would be misleading, for example, to compare two months each with twenty-six working days (as for example, food stores), if one month contained five Fridays

and Saturdays and the other only four. Any apparent drop in sales in comparing these two months could be due entirely to practices stemming from accidents of the calendar. The industry indexes have been adjusted to correct for these irregularities although, as noted earlier, there is need for more research and better data in this area.

#### Adjustments to Labour Input Data

89. In a number of industries monthly or quarterly production data are not available and labour input data have been used to represent output. In cases where these types of data have had to be used,<sup>52</sup> attempts were made to adjust these series to an output concept. In practice it is either impossible or impractical to make output-per-man-hour or per-unit-of-labour input adjustments in those areas outside of manufacturing that are represented by labour input in this study. This mainly arises from the fact that industries outside of manufacturing that are represented by a labour input series are

<sup>52</sup> In industries classified as non-commercial or non-profit motivated, (government departments, schools and hospitals), input only is measured and no attempt is made to measure output. Instead the aim is simply to obtain, via industry of origin, a quantity measure for the income side of the national accounts. In such cases it is unnecessary and undesirable to attempt any adjustment to labour input data aimed at approximating output.

either non-commercial or are industries for which no adequate output measure has been developed. This inability to obtain a meaningful output measure is largely due to data gaps but occasionally it is because of the lack of a clear understanding of what an industry's output is. Examples of these industries are banking, life insurance and radio and television broadcasting.

**90.** In the case of manufacturing, output-per-man-hour trend adjustments are made on the basis of related shipment, inventory and price data. These latter data in themselves do not yield sufficiently reliable output projectors to be used in a monthly or quarterly index. In deriving the output-per-man-hour trend adjustments, deflated shipment and inventory data are divided by the industry's man-hour data to derive monthly output-per-man-hour series. These monthly ratios contain large irregular movements and consequently are smoothed by means of a 12-term moving average. This moving average is then viewed in the light of historical output-per-man-hour ratios, as derived from annual or benchmark worksheets, and modified where it seems necessary. Once the final ratios are calculated they are inserted into the monthly or quarterly worksheets and the labour input indexes are multiplied by them to obtain an estimated "output" index.

**91.** These output-per-man-hour trend adjustments do not permit, even in the best of circumstances, the preparation of precise output measures. They are merely meant to prevent serious bias in the aggregate index levels. The differences between reported man-hours and actual production would be due to many things such as productivity, shifts to salaried workers, sick leave practices and many other factors including reporting practices. In the case of the Index of Industrial Production, the earlier 1935-39 based indexes for the post World War II period were found to be understating production by approximately one per cent per annum on an accumulated basis. This downward bias was almost entirely due to labour input measures being used without adjustment to represent the output of certain manufacturing industries. With the rebasing of the Index to the 1949 base, it was decided to make output-per-man-hour trend adjustments to these monthly indexes. It is believed that these adjustments have resulted in much more accurate indexes. It is expected, therefore, that output-per-unit-of-labour-input adjustments will be attempted in other industries if knowledge of their output increases to a point where production can be adequately measured on a periodic basis.

#### **Adjustment of Current Indexes to Bench-mark Levels**

**92.** As noted earlier, monthly or quarterly indexes of output are generally based on less accurate and complete data than are the annual benchmark indexes. As a result, the current indexes are subject to various biases and need to be corrected periodically for level. It is therefore most desirable that the current indexes be adjusted to more comprehensive annual levels as soon as these become

available, and that this adjustment be made in such a way that the current monthly or quarterly index movements do not become distorted.

**93.** There are a number of techniques available that can be used to adjust current data to benchmark levels; most of these however, will result in some distortion to the original series. For example, the method used in the *Index of Industrial Production (1949 revision)*<sup>53</sup> resulted in distortion and caused considerable difficulty in the latter stages of processing where seasonal influences are removed. No revision has been made to the Index of Industrial Production components for purposes of this paper but in adjusting other industry series to benchmark levels, a different technique has been adopted. This technique is one that was developed by those responsible for the United States Index at the Board of Governors of the Federal Reserve System in Washington. This technique requires the use of an electronic computer since it is too complex to do economically by hand and desk calculator means. Essentially the technique preserves the original data movements while at the same time adjusting them in such a way that they average to the annual levels. Tests show that no significant seasonal variation distortion is introduced through this technique.

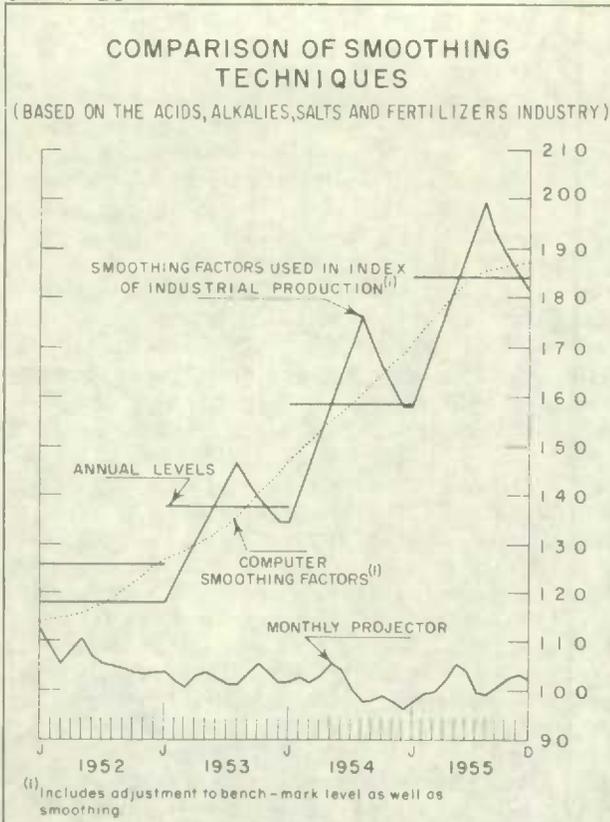
**94.** Basically, the computer benchmark adjustment program yields an adjusting ratio which smooths out the artificial steps in the data both within and between years without altering the original seasonal patterns. Otherwise, the effect of this new technique is somewhat similar to the system used in the revision (1949 rebasing) to the Industrial Production Index in that no one month bears the full brunt of the adjustment.

**95.** The program also has one additional feature in that, at both ends of the series, three alternative adjusting ratios are provided. The statistician must then decide which of the three is most applicable in any particular case or arrive at some more appropriate substitute.

**96.** Following is a depiction of the difference in the two techniques of benchmark adjustment in a series which annually, in the period shown, has not experienced a production decline. The solid line represents the smoothing factor used in the earlier Index of Industrial Production technique. The dotted line is the factor from the computer technique. The latter is considerably smoother while the former contains a seasonal of its own, reaching a peak each August for this series. In situations where the monthly projector not only failed to represent the proper level but went in a counter direction to the benchmark, the adjustment factors based on the old technique would have caused a trough in August. The additional seasonal adjustment problems created by the earlier method can readily be seen.

<sup>53</sup> See pages 30 and 32 of *Revised Index of Industrial Production, 1935-1957*, DBS Catalogue No. 61-502.

CHART-25



**Note:** The smoothing factor is multiplied by the monthly projector and divided by 100 to yield the output index used. This resultant index is then seasonally adjusted for inclusion in the seasonally adjusted industry aggregate.

#### Adjustment for Seasonal Variation

97. Seasonally adjusted production data have been published by the Dominion Bureau of Statistics for some years. The method of seasonal adjustment generally used prior to the mid-1950's was a hand method, based on the "original to 12-month moving average" technique.<sup>54</sup> The series included in this reference document have all been seasonally adjusted using the latest electronic computer techniques<sup>55</sup> and the DBS computer.

98. The method used is the Census Method II<sup>56</sup> developed at the Bureau of the Census in Washington. Although the seasonal program is intended for monthly series, it is able as well to handle quarterly series. In this case, since the program calls for twelve observations for each year, it became necessary to repeat each of the quarterly figures

<sup>54</sup> This method is fully described in DBS Reference Paper No. 77 *Seasonally Adjusted Economic Indicators, 1947-1955 (An Outline of Problems and Methods)*.

<sup>55</sup> *Seasonal Adjustments by Electronic Computer Methods*, J. Shiskin and H. Eisenpress—Technical Paper 12, National Bureau of Economic Research, Inc. New York, 1958.

<sup>56</sup> Work is continuing on the development of Method III, a further iteration or modification of Method II.

three times. The final results then are merely reconverted to a quarterly basis. Fortunately, however, a large portion of the industry of origin output data are prepared on a monthly basis and thus the adaptation of quarterly data to the computer program is not too substantial.

99. The nature and causes of seasonality, problems of its measurement and the nature of time series are discussed in general terms in the reference paper referred to in footnote 54. It is sufficient to note that almost all economic time series are subject to certain broadly repetitive changes within each year and that the burden of the analyst is somewhat lightened when these movements are removed. The following notes are mainly devoted to a discussion of the problems encountered and their solution with respect to the seasonal adjustment by electronic computers of the real output by industry indexes.

100. Generally speaking, problems in the field of seasonal adjustment fall into one of two broad categories, although these two categories are not always mutually exclusive: (a) the effects of irregular movements on the derivation of seasonal factors, and (b) the estimation of seasonal factors for the ends of the series, particularly the projection of the factors into the current period. It is generally agreed that most methods of seasonal adjustment provide adequate results for the mid-portion of the majority of time series.

101. It can be seen from item 7 in the brief description of Method II which follows that the computer program makes provision for the modification of extreme observations. The technique used is to set up a "tolerance band" around the deviations; the width of this band is determined by the fluctuations of the deviations themselves. Those deviations, then, which fall outside this band are brought inside through a simple process of averaging with their surrounding and more "normal" deviations.

102. There is no question but that the above is a desirable feature of the program. However, there are some types of irregulars which can be relatively easily estimated in a subjective but nevertheless more effective manner by the industry output specialist. Probably the most important source of such irregularity in monthly or quarterly indicators is variation within the calendar itself.<sup>57</sup> Such variations must be removed to place the production indexes on a "rate" basis thus reflecting changes in output as though all months or quarters were of the same length.

103. In addition, further correction to the raw data consists in "adjusting out" the effects of strikes, layoffs and similar occurrences. Here again, it is felt that the industry output specialist, using related data, can better quantify these effects than can the

<sup>57</sup> See paragraphs 86-88 for a more complete discussion.

computer using a standardized formula. In many cases, strikes are preceded and/or followed by a period of inventory build-up, so that the one or two months on either side, as well as the strike period itself, may be affected. The technique used requires the estimation of production levels that would have occurred had there been no strike. These strike-adjusted data are then submitted to the computer and the resultant seasonal factors are used to adjust the **actual** strike-affected data. Thus the final seasonally adjusted data still reflect the strike effects but the seasonal factors themselves do not. The same technique would be used to adjust out the effects of any large irregular movement, even one with no apparent cause.

**104.** A discontinuity arose in some industries undergoing a particularly drastic conversion to peacetime operation in 1946 and 1947. There were also long and widespread work stoppages and strikes in the period. Wherever distortion was considered serious enough, the disrupted years were either deleted entirely from the computation or were replaced by an adjacent, more typical year for the purpose of deriving seasonal factors.

**105.** A further type of irregularity develops from institutional breaks and structural shifts. An example of the former occurred early in 1959 when a large aircraft contract was cancelled resulting in a sharp drop in one month in the aircraft industry's index. Subsequently, the series continued with virtually the same month-to-month pattern as before but at a much lower level. In this case, the series was held at its former level in order to derive the seasonal factors. The Canadian iron ore industry experienced, in the early 1950's, a significant structural shift as a result of several large mines coming into operation. Here again, for purposes of deriving the seasonal adjustment factors, an attempt was made to adjust out the effects of this irregularity.

**106.** Census Method II may be summarized briefly as follows:

- (1) A 12-month moving average is run through the "original" data (the production indexes after adjustment for calendar variation and other adjustments as noted above); an additional 2-month moving average is computed to centre the data.
- (2) Ratios of the original data to the centred 12-month moving average are computed.
- (3) Extreme ratios are identified, replaced by more representative ones and smooth curves fitted to the ratios for each individual month. The ratios falling on these curves are then "read back" to yield preliminary seasonal factors.
- (4) A preliminary seasonally adjusted series is computed.
- (5) A weighted 15-month moving average of the preliminary seasonally adjusted series is computed.
- (6) Ratios of the "original" data to the 15-month moving average are computed.
- (7) Extreme items are again replaced by more representative ratios and a smooth curve fitted to the ratios for each month.

- (8) A final seasonally adjusted series is derived.
- (9) Seasonal factors are projected ahead one year.

**107.** It might be remembered, as mentioned earlier, that the seasonal program has been set up for monthly series and that a number of the industry of origin output series are available only quarterly. It then becomes necessary to repeat each quarterly original data figure three times. On a monthly basis, the computer provides various measures including a figure showing months for cyclical dominance (M.C.D.). This measure indicates the number of months required (on average) for the cyclical trend to become dominant in the seasonally adjusted series. An M.C.D. of 3 implies that a 3-month moving average should be run through the seasonally adjusted series (and centred in the mid-month) so that the irregular element will be dampened enough to allow the cyclical trend to emerge dominant. When a quarterly series is so converted to a monthly basis and computer-adjusted, these component measures including the M.C.D. become unusable.

**108.** Tests as to the validity of the current seasonal factors derived from the data (modified where necessary) consist of a number of comparisons. If a comparison of projected seasonal factors (the computer method provides for a projection of one year) with the factors from a series with an additional 12 months data reveals no significant difference in the overlapped data, then normally the projections are accepted for another year. If significant differences are revealed, then hand-method calculations (derived basically from projection of the ratios in step 3 above) are brought forward, and compared with the computer factors. In the light of these, an attempt is then made to justify the computer results. If this cannot be done, then in practice, hand-derived factors are substituted for the problem months, or for the entire series if necessary. Sharp year-to-year changes in the seasonal factors in a series which historically has been relatively smooth are suspect. As a last general safeguard the industry results are tier-charted to pin-point any residual seasonal.

**109.** The decisions taken as to which seasonal factors are to be accepted and which are to be rejected are, of course, to a large degree subjective. Further, the criteria for revisions are not entirely standardized as between industries. Generally speaking, for monthly series, revisions are made on the basis of the size of the average month-to-month amplitude in the seasonally adjusted series. It is spurious accuracy to revise a seasonal factor for a one or two per cent change when the average change in the seasonally adjusted series is far greater than this. Greater effort is concentrated on published series and on those industries which form a relatively large part of aggregate Gross Domestic Product at factor cost.

**110.** A further traditional check on the reliability of the seasonal adjustment involves a comparison of the annual average of the raw data versus that

of the seasonally adjusted. In practice a difference of more than 3 per cent has seldom been found in the data. This test has come to be regarded as having little significance. In cases where one monthly seasonal factor has gone out of line, there is normally an offset in one or two other months, or it is spread throughout the year. However, it has not been found practical or desirable to correct the months where the distortion is marginal, but only the months where it is significant. Thus the factors may no longer total exactly 1,200. To readjust the factors to 1,200 would create much additional calculation and disrupt continuity to some degree.

**111.** Tests have proven on a number of occasions that there is no significant difference between the results of a seasonally adjusted aggregate and the weighted summation of seasonally adjusted components.<sup>56</sup> Thus a decision concerning the level at which the seasonal adjustment will be computed is normally taken on the basis of the amount of analytical detail required.

---

<sup>56</sup> D.J. Daly, "The Direct Adjustment of Aggregates Compared With the Sum of Adjusted Components", in *Seasonal Adjustment on Electronic Computers, OECD, 1960*.

PART V

SOME PROBLEM AREAS AND FUTURE DEVELOPMENT



## PART V

### Some Problem Areas and Future Development

112. The industry of origin approach to an index of aggregate real G.D.P. at factor cost was affected by a number of major problems. Many were conceptual problems and some of these were discussed briefly in Part III. The following paragraphs outline a few of the more practical problems encountered. In addition some comments are made concerning possible future developments.

#### Data Problems

113. Data problems appear in the form of gaps, classification difficulties, inadequate surveys, inconsistencies, etc. It is possible to conceive of the type of information required to calculate the output of most industries. It is quite another thing, however, to obtain these data.

114. In measuring the output of an industry it is necessary to have quantity and value (or value and price) data pertaining to shipments, inventories and purchases. In a theoretically desirable approach,<sup>99</sup> one should deflate an industry's shipments or sales with an appropriate price index, deflate the inventory book values in such a way as to derive physical change in base year dollar terms and then add shipments and inventory change together for a gross output measure. From this aggregate should then be deducted the constant dollar input series, which should be derived by deflating intermediate input purchases and adjusting for the physical change in inventories of intermediate inputs also expressed in base year dollars.

115. It is not possible to fully implement such a detailed approach in the industry work because of a lack of quantity data, inventory prices, certain input prices and, in some areas, even value data.

116. In many service industries the lack of inventory value and price data poses no problem at all since inventories are either not held or are held in minute amounts. This does not mean that data gap problems are then minimized. On the contrary, no data (inventory, sales or purchases) are collected for some service industries. Then, some industries such as taxicabs, barbering and hairdressing are surveyed on a decennial basis only, as part of decennial censuses. It may be possible to improve the measurement of all these industries following the latest (1961) Census of Merchandising and Services which will permit the construction of later bench-marks and perhaps the commencement of more timely and periodic surveys.

117. In recent years more and more evidence is accumulating to indicate that the personal and business service-producing industries are becoming relatively more important, especially in terms of labour requirements. In Table 8, Part VI, for example, it is seen that persons with service industry jobs made up 39 per cent of the employed labour force in 1946; by 1961 they represented nearly 53 per cent.

118. Problems associated with data gaps are particularly difficult to circumvent in the area of current monthly or quarterly output indexes. There are a number of industries (for example, education and hospitals) for which no monthly or quarterly data are available. For others, such as dry-cleaning and hotels, current employment data are available, but no monthly or quarterly output data are collected. In preparing the quarterly output indexes it was found that some monthly and quarterly service industry data, available for recent years, do not extend back to 1946. Thus, for such industries, it became necessary to estimate the missing quarterly data. Where available, annual data were used along with seasonal patterns implicit in the current data collected for later years.

119. Certain industries present especially difficult data problems. In agriculture, for example, present data available for measuring output are based primarily on commodity statistics as opposed to establishment statistics. This problem is not peculiar to agriculture, but it seems particularly important here. Because of the fact that basic statistical collections are based on commodity data, there is some possibility that a part of the production occurring in agricultural establishments is being missed. For example, if a farmer has secondary money-making activities associated with his farm (as for example, a motel, an implement repair business, or a small retail store), and he does not maintain separate accounting records covering the receipts and expenditures pertaining to these non-farming activities, they will be missed entirely in present DBS surveys. Although indexes of agricultural output have been prepared and are included in this study they are based on commodity farm data and thus may fail to measure all the output of agricultural establishments.

120. A further problem arises in the case of agricultural product inventories. The present output measures combine marketings, income-in-kind, and changes in farm inventories, revalued in base year dollars, as a gross output measure. The livestock inventory data are based on the numbers of animals within rather broad categories, as for example, calves (one year old and under) and heifers and steers (one to two years). With broad inventory categories such as these expressed in terms of numbers only, it is impossible to quantify a change

<sup>99</sup> The deflation of current values, if done correctly, yields the same constant dollar result as will be obtained by revaluing current quantities using base period unit prices. Thus although the deflation approach is discussed, the revaluation of current quantities is the most commonly used approach.

in inventories in a manner that is completely consistent with inputs and with farm marketings, (the latter are expressed in terms of weight). The problem of inconsistency between inventory change and marketing is important on an annual basis, but it becomes critical on a current quarterly basis. Here the weight of an animal can vary considerably, especially so in the case of young growing animals.

**121.** Besides the problem of the growth of animals and the need to measure inventories in such a way as to reflect this growth, there is also the problem of the growth of crops. This problem is, of course, a quarterly problem and not an annual one except insofar as crop years differ from calendar years. Inconsistencies will occur between agriculture and other industries which provide intermediate inputs to agriculture if account is not taken of the cost of growing crops. For example, a farmer who purchases gasoline, fertilizers and other intermediate inputs from non-farm sources and then uses these in planting a field crop has spent money. He has used up the products of other industries. But until such time as he harvests and sells the crop, he has no product to show for it. In other industries, the costs incurred in producing a product to be sold later would be considered as goods-in-process inventories. In the case of agriculture, this should also be the case, but present data (and probably present farm records) do not permit such a refinement. Since this problem is very largely confined to the calendar year the seasonally adjusted indexes should minimize it.

**122.** A general problem also arises in the case of the construction industry. The Dominion Bureau of Statistics does not at present have a census of the construction industry *per se*, but rather is dependent upon investment surveys. These investment surveys cover all construction activity but do not permit the preparation of refined output measures for the construction industry. Further, as in the case of agriculture, most industry statistics have been developed along major activity lines and, in many instances, it would be difficult to add construction work done by the industry's own labour force to the major activity of that industry. For example, in the industry indexes for rail transportation, various activities or service products such as passenger service, freight service, restaurant service, switching services, and so on are noted. These are all associated with the major activity of transportation. The railways also maintain a substantial number of employees who are engaged in repair construction and in new investment construction. The new investment construction activity is not measured as output of the railway industry but as part of the construction industry. On the other hand repair construction is left in the railway industry measure.

**123.** Available construction activity data would permit the preparation of a construction industry measure on a crude basis but it does not provide sufficient information to adjust the output measures of other industries with own account new investment construction. Because of this latter fact it was

deemed best to measure all new investment construction as part of the construction "industry". In order that the base year weights approximate the projectors for the construction "industry" total, estimates were made of that part of each industry's salaries and wages paid to employees engaged in new investment construction work. Since these payroll data were included with each industry's total salaries and wages these estimated salary and wage totals for own account construction were then deducted from the industry's base year Gross Domestic Product value and added to the base year value of the construction industry (i.e., G.D.P. originating in construction establishments).

**124.** It is most difficult to say what effect the above treatment of construction activity has on the aggregate output measures. Certainly the industry indexes suffer from a lack of completeness. With the implementation of the revised standard industrial classification and its broader establishment boundaries, it may become possible to measure the construction industry *per se* and this in turn will probably require some form of census for construction establishments.

#### Production Indicators for Financial Intermediaries

**125.** In Part III the conceptual background for quantity indexes in the area of financial intermediaries was discussed and it was noted that no output measures had as yet been developed. To the present time no clear-cut conclusions concerning the precise nature of the required data (or their statistical treatment) have been reached. Clearly, a considerable amount of basic research as well as discussion with informed economists and other experts in the banking, insurance and other financial "industries" are still required.

**126.** One possible and perhaps meaningful approach to an output measure for the life insurance industry, for example, would be to consider that industry to be primarily devoted to the servicing of contracts. These contracts would be the numerous policies (of greatly varying types) in force whether fully paid up or not. What would be needed are (a) an appropriate weighting system to properly weight together the number of policies in force and (b) the number of policies reported in considerable detail (types of policy). An appropriate weighting system might be based on the estimated average per annum cost of servicing these contracts. This type of indicator will require much further study in the sense that more information is required concerning costs, types of policies, and other revenue-producing services and the ease and efficiency with which such information can be subjected to statistical treatment. In the meantime a labour input measure is used to represent output in this industry as well as in other insurance industries.

**127.** Much the same problems exist in other financial intermediary industries. No output measures have been prepared, — only primary input measures. This is obviously unsatisfactory and basic research

will have to be undertaken to fill this gap in statistical knowledge. At the present time DBS has only a limited number of surveys in this general area, none of which were organized with the collection of output data in mind.

#### Production Indicators for Non-commercial Establishments

128. Even though non-commercial establishments are measured on a labour input basis data improvements are required. In the case of public administration and defence industries it was not possible, except for the armed forces, to take account of shifts in the skills of the labour force through the proper weighting of the numbers engaged in the various trades and professions. Instead "a total number employed" series has had to be used. This same approach was used for most other non-commercial industries (see Appendix B) and thus, with the general

upgrading of skills in hospitals and other establishments the industry-of-origin indexes probably have a downward bias in these labour input series.

129. In the present study it has not been possible to classify individual establishments as commercial or non-commercial. This is due to the fact that presently available industry aggregates contain both types of establishment and it was not feasible to re-work these basic data to yield the desired establishment aggregates. Consequently entire "industries" were classified according to predominating activity. The areas of possible distortion are not considered to be large however and thus the present treatment should have no significant effect on the use of the commercial and non-commercial aggregates.

130. The following table sets out the relative importance of the non-commercial industries in the two weight-base periods:

The Relative Contributions of Non-Commercial Industries.

	Percentage of G.D.P. originating	
	1935-39	1949.
Public administration and defence .....	4.590	4.666
Hospitals .....	0.906	0.931
Education .....	2.378	1.588
Other community service n.e.c. <sup>1</sup> .....	0.788	0.599
Domestic service .....	1.405	0.487
<b>Totals</b> .....	<b>10.067</b>	<b>8.271</b>

<sup>1</sup> Includes welfare, religion and other community service, n.e.c.

It can be seen that the contribution of these industries to total G.D.P. at factor cost has declined to some extent over the period, due, in no small measure, to the decline in domestic service.

#### Rebasing Problems

131. When the deflated Gross National Expenditure series were being rebased during the latter part of 1960 and early 1961, consideration was given to rebasing the industry real output measures. It was decided that it would be impossible to rebase the industry indexes to 1957 and at the same time publish the industry-of-origin index results within a reasonable period of time. It was felt that the industry indexes should be published as soon as possible on the 1949 base and that plans should be undertaken which would allow the industry-of-origin indexes to be placed on a 1961 weight-base period. In order to convert to a 1961 base, studies are now going forward in the use of computer techniques in index number preparation. It is

believed that a very large portion of quantity index work can be satisfactorily done using electronic computers. If this is true, and computer programmes can be written for large portions of the industry quantity index work, then it should be possible to rebase the industry indexes on a more frequent basis in line with the recommendations of the Statistical Office of the United Nations.

132. The choice of the year 1961 as a new base period was made for several reasons. One of the most important reasons for this decision was the plan to develop an input-output table for 1961 which in turn would provide the basic weighting system for the output indexes. Another important reason was that the 1961 decennial censuses of merchandising and service industries would provide benchmark data for this important industry area. These census surveys will also provide basic data for quantity surveys in certain service industries. Another major reason for choosing 1961 was the implementation of the new industry classification

which will be operational in time to classify the 1961 data. The fourth reason lies in the fact that present intentions are to rebase various DBS price and labour data indexes to a 1961 base. The rebasing of the industry real output data will thus form part of a consistent index system. Finally, an up-dating of the weight base is urgently required since the 1949 base is now remote and could cause some distortion in the industry indexes.

### Industry Classification

**133.** The industry classification used was based on the standard industrial classification manual published in 1948.<sup>60</sup> The recent revision to the industrial classification<sup>61</sup> was not adopted in this reference paper. It was necessary to utilize the earlier classification manual because basic statistics in the Dominion Bureau of Statistics have not been fully tabulated on the new classification basis. It is intended to make only essential classification revisions to the present industry indexes over the next few years. This will permit a concentration on the full implementation of the revised classification as part of the task of rebasing to a 1961 base period. The 1948 industry classification has become in part obsolete through industrial structural changes that have occurred since 1948. However, the greatest difference in the plans for the 1960 classification lies in the full application of the definition of an establishment. The establishment is defined as "the smallest unit which is a separate operating entity capable of reporting all elements of basic industrial statistics". Thus, once an establishment is determined or recognized, all economic activity occurring within the establishment should be measured. Not to do so would mean that certain gaps would exist in industry statistical records. The implementation of the 1948 classification system did not go this far but it still represented a major advance in the presentation of industrial statistics. Unfortunately a number of practices that cause distortion and statistical gaps in production records continued to exist. For example, certain establishments were split arbitrarily between two or more activities such as between coke and gas production. Further, establishment production statistics were generally confined to major activity, thus leaving unrecorded the output or value of economic production arising from secondary activities. An

<sup>60</sup> *Standard Industrial Classification Manual*, DBS 1948.

<sup>61</sup> *Standard Industrial Classification Manual*, DBS 1960, Catalogue No. 12-501.

example of this would be the exclusion from manufacturing industry data of such secondary activities as transportation and wholesale and retail operations.

**134.** The output indexes included in this report suffer from the above noted gaps in the coverage of economic production for individual industries. In the case of the goods-producing industries at least, principal activity only is measured and thus there exists the implicit assumption that secondary activities move with primary activity. Some bias probably exists in the industry indexes because of this lack of data for secondary activities. In certain instances, such as in the case of construction where all new investment construction activity is covered as part of the construction industry regardless of where the activity took place (and also in the case of rents where imputations are made) complete activity coverage is obtained. Unfortunately, this is not the case for most such secondary industry activities.

**135.** Although industry projectors may be deficient for measuring all economic production within an industry, base year weights reflect G.D.P. at factor cost originating in each industry on a proper basis. Thus any bias existing in the industry projectors can only come into being because of relative changes in the proportion of secondary activities to the primary activity. Just how serious this problem may be, it is impossible to say at this time. With the collection and tabulation of 1961 data on the new classification and establishment definition basis, it may become possible to make an appraisal of bias in the historical production indexes. Such an appraisal can at best be only approximate since a complete historical overlap of statistical records on the old and the new classification and definition basis cannot be made.

### Future Development

**136.** The above paragraphs concerning data rebasing and classification problems along with those paragraphs in Part III which deal with conceptual problems clearly indicate the need for more basic research and development work in the industry of origin real G.D.P. index work. How much can be accomplished in the years ahead will depend on many factors including the general development of the integrated statistical system, the closing of data gaps, availability of fully qualified and adequately trained personnel, the development of electronic computer applications and of course the stated needs of industry output index users.

PART VI

STATISTICAL TABLES



TABLE 1. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61

1949=100

	Gross Domestic Product	Goods-producing industries									
		Total goods	Agriculture	Forestry	Fishing and trapping			Mining <sup>1</sup>			
					Total	Fishing	Trapping	Total	Metals	Non-metals	Fuels
1949 weights .....	100.000	53.080	10.714	2.108	0.540	0.457	0.083	3.245	1.925	0.268	0.915
1935 .....	49.7	49.2	95.0	59.2	72.4	72.0	75.9	60.8	72.1	39.1	49.3
1936 .....	52.4	51.9	85.0	66.8	76.0	77.9	74.0	68.3	81.3	52.3	54.5
1937 .....	56.7	58.1	85.5	87.1	73.9	76.1	70.8	79.4	94.3	69.9	59.8
1938 .....	56.5	58.0	109.5	56.8	75.5	76.6	75.6	83.7	101.6	55.6	62.8
1939 .....	60.2	63.3	126.8	71.1	78.4	74.2	91.9	90.3	108.6	66.6	69.7
1940 .....	69.2	72.5	127.8	83.7	79.8	72.2	102.1	96.2	114.5	67.3	77.7
1941 .....	80.6	83.7	106.6	82.9	83.9	80.2	96.5	101.0	118.8	84.4	81.7
1942 .....	95.0	102.1	164.2	81.5	80.0	74.5	96.9	99.1	116.8	78.1	83.4
1943 .....	99.0	99.0	102.4	84.1	80.9	75.4	98.0	88.8	101.8	81.9	77.5
1944 .....	103.0	101.4	126.2	87.1	78.5	78.4	89.7	79.7	86.9	81.0	75.3
1945 .....	97.0	89.5	94.8	93.5	87.6	86.6	93.2	77.2	83.5	87.0	70.0
1946 .....	89.8	88.2	109.4	103.1	87.1	85.9	93.4	74.3	73.2	96.6	72.2
1947 .....	93.8	93.4	102.8	118.7	81.0	79.5	89.4	78.5	79.6	109.2	66.0
1948 .....	97.1	98.3	106.1	118.8	87.6	85.6	98.4	90.0	88.4	118.8	83.2
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950 .....	106.4	107.4	106.2	118.9	108.9	111.3	95.6	109.5	103.5	139.1	112.1
1951 .....	114.6	117.7	120.9	141.5	111.5	113.4	100.8	123.4	107.9	156.3	143.5
1952 .....	122.7	127.0	148.8	129.7	101.6	100.7	106.6	131.0	110.3	155.5	163.9
1953 .....	126.7	130.3	136.3	123.7	103.6	103.3	105.0	142.1	115.7	152.9	192.7
1954 .....	123.9	123.5	104.3	128.4	112.3	110.7	121.3	158.7	129.0	161.4	215.6
1955 .....	136.3	139.2	132.1	135.7	105.6	101.1	130.3	185.2	142.7	180.2	273.2
1956 .....	147.7	152.5	141.7	143.4	111.6	110.9	115.7	212.3	151.0	187.6	344.7
1957 .....	147.0	148.3	117.5	130.5	105.5	103.5	116.7	227.8	170.0	179.0	358.2
1958 .....	148.9	149.1	125.1	115.6	117.8	118.5	113.9	227.0	180.3	170.9	329.5
1959 .....	156.5	155.9	125.2	130.6	105.9	105.3	108.9	251.1	201.3	191.4	363.1
1960 .....	158.5	156.7	128.0	141.8	104.1	101.5	118.4	253.3	197.9	192.6	380.2
1961 .....	161.4	157.9	116.0	130.8	115.7	114.8	120.9	266.9	191.7	211.7	430.7
Goods-producing industries											
Manufacturing <sup>2</sup>											
Non-durable manufacturing											
	Total	Total	Foods and beverages	Tobacco and tobacco products	Rubber products	Leather products	Textiles	Clothing	Paper products	Printing, publishing and allied industries	Products of petroleum and coal
1949 weights .....	27.340	14.742	3.814	0.248	0.430	0.508	1.623	1.801	2.649	1.273	0.513
1935 .....	39.0	44.1	44.5	31.1	49.8	70.8	49.7	57.2	38.6	50.2	37.8
1936 .....	43.0	48.1	49.8	35.7	54.5	71.1	55.5	60.5	42.4	53.2	40.8
1937 .....	49.2	52.8	53.1	41.4	63.6	78.1	59.8	65.3	48.9	56.5	44.9
1938 .....	45.3	49.0	53.1	45.9	55.0	68.9	48.1	61.3	39.3	52.9	44.4
1939 .....	48.7	53.7	56.3	49.2	60.4	80.3	59.5	67.3	45.2	54.7	48.1
1940 .....	60.4	61.6	62.4	53.1	66.0	85.7	81.1	78.2	54.3	54.8	53.6
1941 .....	78.7	73.7	72.3	61.3	87.5	104.2	91.7	88.4	61.6	60.6	61.1
1942 .....	96.1	84.3	77.6	76.0	85.3	110.8	102.0	100.9	61.5	61.2	59.4
1943 .....	104.0	85.9	80.8	82.3	83.3	111.6	93.8	97.7	60.0	59.7	65.1
1944 .....	106.1	89.5	89.5	89.6	84.4	110.5	87.9	91.7	63.9	61.4	73.6
1945 .....	92.9	88.2	91.7	103.2	102.1	114.5	87.5	91.4	69.1	67.3	71.9
1946 .....	85.2	89.8	98.0	90.6	89.5	124.0	88.7	95.3	81.0	76.9	74.3
1947 .....	93.2	93.2	97.2	93.4	127.4	109.1	94.0	92.2	89.1	83.6	79.8
1948 .....	97.3	96.3	98.5	93.4	116.4	95.5	97.3	97.6	94.9	86.6	89.9
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950 .....	106.2	106.0	103.8	103.4	116.8	95.6	112.5	101.3	109.3	101.5	111.9
1951 .....	115.0	110.8	106.8	95.0	124.9	90.4	113.1	101.2	117.5	105.1	128.5
1952 .....	118.5	113.2	113.5	108.0	118.9	101.0	102.9	111.4	113.4	107.5	140.1
1953 .....	126.4	120.2	117.4	120.3	130.3	106.4	107.9	115.0	118.1	114.7	153.5
1954 .....	122.9	121.2	120.6	124.7	119.2	100.2	94.3	108.9	124.1	121.6	165.0
1955 .....	134.7	130.4	126.8	135.5	141.0	106.9	114.0	112.8	131.0	127.1	188.3
1956 .....	145.1	138.1	133.1	145.9	154.0	115.6	117.3	117.6	137.8	137.3	216.1
1957 .....	142.9	139.7	135.6	161.0	147.8	115.6	117.6	116.8	135.5	138.2	223.5
1958 .....	140.7	141.3	141.9	173.2	137.2	114.4	109.9	114.4	135.6	134.4	216.8
1959 .....	149.8	150.1	147.6	179.9	161.1	120.3	124.4	113.1	144.7	143.2	241.5
1960 .....	149.3	151.8	150.2	182.0	143.3	111.8	122.5	107.9	148.4	146.5	250.6
1961 .....	153.0	157.0	154.2	193.6	145.7	123.8	134.6	107.1	153.4	148.2	258.8

See footnotes at end of table.

TABLE 1. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61 - Continued  
1949=100

	Goods-producing industries											
	Manufacturing <sup>2</sup>									Construction <sup>3</sup>	Electric power and gas utilities	
	Non-durable manufacturing			Durable manufacturing							Total	Electric power utilities
	Chemicals and allied products	Miscellaneous manufacturing industries	Total	Wood products	Iron and steel products	Transportation equipment	Non-ferrous metal products	Electrical apparatus and supplies	Non-metallic mineral products			
1949 weights	1.359	0.524	12.598	2.108	4.026	2.651	1.801	1.418	0.794	6.379	1.646	1.480
1935	31.4	31.4	32.7	42.3	29.2	34.2	40.1	22.9	24.6	33.5	39.1	37.7
1936	33.7	34.3	36.9	47.5	33.8	35.5	46.7	25.0	29.8	37.5	42.1	40.8
1937	39.3	37.1	44.9	53.6	42.9	43.4	54.4	32.5	38.2	44.7	46.1	45.0
1938	37.9	36.9	40.9	50.7	36.6	38.1	55.8	28.0	34.3	42.2	46.3	45.1
1939	40.7	38.6	42.7	54.0	39.1	37.7	58.4	29.4	35.7	43.4	49.7	48.5
1940	49.8	42.6	59.3	65.5	58.9	61.1	70.5	41.9	45.0	49.1	55.9	54.6
1941	77.2	60.8	85.8	74.5	86.4	106.1	98.9	61.8	60.1	63.6	64.2	63.2
1942	126.5	88.5	112.1	77.4	114.7	157.1	130.4	74.9	68.2	87.9	72.2	71.3
1943	135.1	112.1	128.2	73.6	131.6	198.4	145.6	85.0	68.8	65.6	77.2	76.5
1944	142.8	113.0	128.3	76.1	118.4	235.7	130.9	85.5	66.8	53.5	78.2	77.3
1945	107.1	98.3	99.8	77.2	96.3	157.0	98.8	70.7	63.7	54.9	75.7	74.4
1946	87.0	80.2	79.9	86.8	80.8	80.6	81.8	67.7	72.0	68.4	79.4	78.2
1947	90.8	84.1	93.3	98.2	93.6	95.3	89.6	89.6	86.3	79.7	89.8	89.3
1948	95.7	81.4	98.4	100.6	101.5	97.2	99.2	91.5	92.2	89.2	94.8	94.2
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	107.7	104.8	106.5	108.2	102.5	108.3	104.0	112.5	111.0	106.7	113.2	113.7
1951	120.0	119.0	119.9	114.8	117.0	131.3	114.1	120.7	119.8	110.6	129.4	131.1
1952	122.3	121.8	124.8	115.8	118.9	149.1	112.2	124.5	122.8	123.2	140.7	143.4
1953	139.9	141.1	133.6	125.4	115.3	165.2	120.1	150.9	139.2	130.1	147.9	151.0
1954	152.1	134.3	124.8	124.2	106.2	137.3	117.0	151.7	146.1	129.8	161.4	164.6
1955	165.5	136.4	139.7	136.4	123.8	145.1	127.5	176.2	171.1	139.8	183.3	187.9
1956	174.8	147.0	153.3	138.3	145.3	157.9	133.0	191.3	191.5	165.7	204.9	208.9
1957	183.4	153.3	146.7	127.3	139.6	151.2	127.6	183.6	191.3	174.7	220.3	223.6
1958	198.0	166.3	139.9	132.0	128.3	132.5	126.7	176.2	205.9	178.4	239.1	240.0
1959	208.4	183.2	149.5	136.6	147.2	131.5	134.7	184.8	223.2	170.7	268.7	263.3
1960	219.7	191.6	146.4	136.0	137.3	130.0	148.3	180.2	210.9	163.0	298.0	287.4
1961	222.1	213.0	148.4	139.6	139.4	129.8	147.6	182.6	220.2	168.4	317.7	298.5

	Goods-producing industries					Service-producing industries						
	Electric power and gas utilities	Other goods industries n.e.c. <sup>4</sup>				Total service	Transportation, storage and communication					
		Gas utilities	Total	Contract drilling (excluding drilling for oil and gas)	Manufacturing repair service		Municipal water works	Total	Transportation <sup>5</sup>			
									Total	Air transport and airports	Railway transport (including express)	Passenger transport, (urban suburban and interurban)
1949 weights	0.166	1.108	0.045	0.819	0.244	46.920	8.363	6.528	0.150	3.594	0.815	
1935	57.0	60.4	50.3	55.2	72.2	50.2	43.2	41.8	3.8	41.2	38.9	
1936	57.7	62.0	50.3	58.0	72.3	52.9	46.8	46.4	5.4	45.4	39.6	
1937	59.8	65.8	50.3	65.1	71.2	55.5	49.7	50.6	7.7	49.9	41.2	
1938	60.3	62.1	48.1	59.1	70.8	55.2	48.7	48.8	5.5	47.0	40.6	
1939	62.2	62.8	43.2	60.9	70.9	57.3	51.6	51.0	9.5	49.6	41.6	
1940	70.1	68.2	50.7	67.3	74.1	66.2	63.4	64.1	13.5	65.9	47.5	
1941	73.8	74.7	56.5	75.4	77.8	77.9	77.8	79.6	16.9	86.8	55.8	
1942	79.0	83.3	62.0	87.1	80.7	88.5	87.7	91.3	25.2	109.4	70.7	
1943	80.4	93.7	55.5	103.3	83.9	99.2	98.0	103.3	36.1	128.7	83.1	
1944	83.2	99.9	72.6	109.9	87.5	104.7	100.1	105.3	36.6	130.6	88.3	
1945	87.7	97.6	110.2	101.8	88.0	104.3	98.7	102.8	38.9	120.8	90.1	
1946	90.1	96.1	131.1	96.0	89.9	91.6	90.5	93.2	46.9	101.1	95.7	
1947	94.5	93.6	85.3	94.1	93.4	94.2	98.2	101.5	59.0	106.9	95.8	
1948	100.1	95.2	84.3	95.3	96.9	95.8	99.8	102.4	86.2	104.5	96.3	
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1950	108.8	115.0	125.7	118.3	102.1	105.2	103.3	102.1	118.0	99.7	96.4	
1951	114.3	117.6	106.6	121.6	106.0	111.1	113.1	111.4	151.2	110.0	96.8	
1952	116.1	124.2	108.5	129.6	108.3	117.8	119.4	116.6	192.7	115.0	92.8	
1953	119.7	132.2	110.1	140.0	110.3	122.7	120.9	117.1	227.9	111.9	90.5	
1954	132.8	124.3	118.1	129.4	108.5	124.3	117.9	110.8	253.6	101.8	85.4	
1955	142.0	141.0	134.9	149.0	115.4	132.9	133.6	127.9	351.3	119.5	82.1	
1956	169.0	148.4	164.1	156.8	117.3	142.3	149.2	143.3	422.3	136.2	76.2	
1957	190.9	141.1	131.8	147.3	122.2	145.6	149.5	141.0	454.7	127.4	74.0	
1958	230.4	135.3	92.7	140.1	126.9	148.7	146.6	135.2	501.6	116.7	71.4	
1959	316.6	143.6	113.8	148.2	133.6	157.1	160.6	150.8	548.7	122.2	71.0	
1960	392.7	139.9	115.6	142.5	135.5	160.5	163.9	151.8	601.2	115.5	70.6	
1961	490.6	141.4	120.4	143.5	138.1	165.3	172.1	159.7	676.7	115.1	69.6	

See footnotes at end of table.

TABLE 1. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61 - Continued

1949 = 100

	Service-producing industries											
	Transportation, storage and communication							Trade				
	Transportation <sup>a</sup>		Storage		Communication			Total	Wholesale trade			
	Water transport and stevedoring	Other transport <sup>b</sup>	Total	Grain elevators	Total	Telephone	Other communication <sup>c</sup>		Total	Wholesalers proper	Other wholesalers <sup>d</sup>	
1949 weights .....	1,029	0,940	0,230	0,186	1,605	0,805	0,800	14,562	4,995	2,871	2,124	
1935 .....	59.0	34.4	..	103.8	41.1	39.4	42.8	45.1	43.3	43.4	43.6	
1936 .....	69.0	38.4	..	82.1	43.0	41.0	45.0	48.5	47.6	47.9	47.5	
1937 .....	75.6	41.2	..	41.3	46.0	43.4	48.7	52.3	51.2	52.3	50.0	
1938 .....	73.5	42.5	..	57.3	46.6	44.3	48.9	50.9	50.0	50.5	49.8	
1939 .....	75.7	44.3	..	98.3	47.7	45.7	49.8	53.4	53.4	54.6	52.3	
1940 .....	95.8	45.8	..	139.2	50.7	48.1	53.2	58.4	61.5	63.9	58.4	
1941 .....	110.3	50.6	..	189.0	56.0	51.6	60.4	65.1	73.9	77.2	69.7	
1942 .....	88.6	54.9	..	181.5	60.2	55.0	65.4	67.2	79.9	83.9	74.5	
1943 .....	86.7	54.3	..	194.4	63.6	58.6	68.6	68.8	82.9	85.8	79.3	
1944 .....	87.6	55.5	..	174.0	68.9	62.3	75.6	72.8	86.8	88.5	85.1	
1945 .....	101.9	58.3	..	151.5	73.9	67.3	80.5	77.4	86.8	88.7	84.6	
1946 .....	94.5	66.5	87.8	89.2	79.9	74.4	85.3	89.4	89.7	94.5	83.2	
1947 .....	109.5	84.0	92.7	91.2	85.6	81.8	89.5	97.3	96.8	100.7	91.4	
1948 .....	109.1	94.6	87.4	83.9	91.1	89.9	92.3	96.0	97.4	100.4	93.3	
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1950 .....	107.4	107.8	102.2	102.1	108.5	109.8	107.2	106.9	103.2	102.1	104.6	
1951 .....	121.5	111.8	131.5	136.9	117.3	117.7	116.8	108.1	111.2	106.3	117.8	
1952 .....	119.9	127.5	175.9	188.2	122.6	122.5	122.7	114.6	117.2	108.3	129.3	
1953 .....	121.9	137.2	179.9	191.8	128.1	130.2	126.0	121.3	122.3	112.7	135.2	
1954 .....	108.2	145.9	185.7	193.7	138.1	138.3	137.9	120.6	118.8	110.8	129.6	
1955 .....	121.3	171.6	182.4	184.7	149.8	150.1	149.6	132.0	129.4	118.8	143.6	
1956 .....	137.5	190.1	218.4	218.9	163.3	164.2	162.3	144.2	144.7	130.4	164.1	
1957 .....	134.8	208.1	217.3	210.6	174.6	174.7	174.4	144.6	144.9	127.1	168.9	
1958 .....	118.1	221.6	217.8	210.0	183.0	187.7	178.3	147.4	147.6	128.8	173.1	
1959 .....	134.4	283.5	218.6	205.8	191.9	199.0	184.8	156.4	161.9	143.8	186.4	
1960 .....	137.2	305.2	212.1	203.6	206.0	215.1	196.9	156.6	161.8	145.0	184.4	
1961 .....	147.2	339.2	220.3	214.5	215.4	228.6	202.1	158.2	162.7	142.3	190.3	
Service-producing industries												
Trade												
Retail trade												
Total	Grocery and combination stores (chain)	Grocery and combination stores (independent)	Clothing and shoe stores	Department stores	Motor vehicle dealers	Garages and filling stations	Furniture, appliance and radio stores	Drug stores	Variety stores	Lumber and building material dealers	Hardware stores	
1949 weights .....	9,567	0,233	0,721	0,786	1,526	0,850	0,529	0,375	0,332	0,298	0,362	0,294
1935 .....	46.0	45.5	40.9	42.5	54.4	40.3	38.0	38.9	31.6	45.9	29.3	41.3
1936 .....	48.9	46.6	43.3	45.9	56.3	48.2	42.3	42.9	32.9	49.6	32.8	45.3
1937 .....	52.8	48.2	47.3	49.7	57.4	62.7	48.6	48.2	35.7	53.9	34.5	45.7
1938 .....	51.3	48.0	46.6	45.5	55.6	53.6	52.4	44.2	35.0	55.1	35.2	46.4
1939 .....	53.3	52.1	48.2	48.2	58.5	52.8	54.9	45.3	36.1	61.0	37.6	47.9
1940 .....	56.9	56.3	54.0	53.6	60.8	57.9	57.5	53.0	39.6	67.4	42.9	49.5
1941 .....	60.9	63.0	59.5	62.0	65.3	54.2	59.2	54.2	46.3	77.1	47.5	52.8
1942 .....	61.2	63.0	65.7	72.5	69.1	30.6	31.2	51.1	51.4	84.9	46.7	56.4
1943 .....	62.0	58.8	70.8	76.2	69.0	25.3	23.8	45.1	55.5	84.9	46.3	58.6
1944 .....	66.1	64.4	76.1	81.3	75.1	28.1	24.9	47.2	60.2	88.6	51.2	61.3
1945 .....	72.9	68.5	83.8	89.0	82.6	33.7	29.2	54.4	64.8	95.5	53.7	72.0
1946 .....	89.2	72.4	95.6	102.6	94.7	64.9	63.5	82.4	72.4	103.5	75.6	100.1
1947 .....	97.5	82.5	99.3	105.9	98.7	88.2	91.1	97.8	79.9	101.0	93.8	104.0
1948 .....	95.3	89.2	93.6	98.6	95.5	67.0	95.7	95.3	89.6	99.4	94.2	99.1
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950 .....	108.9	114.5	104.9	97.3	101.2	148.5	96.9	107.9	103.9	103.9	116.0	100.8
1951 .....	106.5	121.7	107.7	98.6	92.9	165.4	96.7	102.1	106.5	101.9	103.3	92.0
1952 .....	113.3	139.1	110.6	103.6	100.2	179.8	100.9	124.6	112.3	111.8	106.3	89.3
1953 .....	120.8	159.8	117.1	106.6	105.1	196.2	109.4	137.6	119.7	118.5	120.2	95.3
1954 .....	121.6	178.1	121.8	104.4	109.1	173.6	124.2	153.3	118.7	123.4	119.1	95.5
1955 .....	133.4	197.4	125.4	107.9	119.0	210.8	142.1	183.7	125.7	132.7	130.4	98.8
1956 .....	143.9	223.4	131.0	116.5	128.0	221.5	159.2	197.8	137.4	144.9	135.6	106.8
1957 .....	144.4	243.3	135.1	118.8	130.1	201.8	173.9	189.7	145.8	153.3	128.6	106.5
1958 .....	147.3	262.0	140.2	121.1	134.5	186.2	192.1	181.8	150.7	159.2	137.1	109.7
1959 .....	153.5	285.1	145.2	124.5	141.2	198.3	207.0	185.9	153.4	165.6	137.2	111.4
1960 .....	153.9	304.0	148.2	127.4	143.3	189.3	217.1	176.5	154.3	172.7	122.7	109.7
1961 .....	155.9	311.5	151.4	127.3	146.5	188.5	225.0	184.5	158.7	180.0	121.4	110.6

See footnotes at end of table.

TABLE 1. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935-61 - Concluded  
1949=100

	Service - producing industries										
	Finance, insurance and real estate				Public administration and defence				Community, recreation, business and personal service		
	Total	Rents <sup>9</sup>	Ranking	Other finance, insurance and real estate <sup>10</sup>	Total	Federal administration and defence <sup>11</sup>	Provincial government	Municipal and other local government	Total	Community service	
										Total	Education
1949 weights .....	9.127	5.545	1.121	2.461	4.666	2.612	1.046	1.008	10.202	4.199	1.588
1935 .....	58.4	62.0	52.7	53.3	47.9	33.0	60.2	74.3	55.7	63.5	80.2
1936 .....	60.7	62.9	52.1	60.4	49.0	33.2	63.3	75.8	57.9	64.9	80.5
1937 .....	60.4	63.8	50.2	58.2	51.6	34.2	72.0	76.6	61.4	67.7	81.7
1938 .....	59.8	64.1	50.1	55.2	56.3	37.1	86.7	76.5	61.8	69.7	82.0
1939 .....	60.4	65.5	52.1	53.2	61.6	50.6	73.1	78.8	62.5	71.2	83.2
1940 .....	61.3	67.2	53.3	52.2	104.8	129.5	67.4	78.9	66.2	73.4	84.3
1941 .....	64.3	69.4	58.6	56.2	159.6	228.0	66.8	76.3	70.9	75.3	84.5
1942 .....	67.4	72.1	62.2	59.4	235.3	364.7	63.5	73.6	71.9	77.2	84.9
1943 .....	69.7	74.4	64.1	62.0	311.2	499.1	65.5	72.4	74.4	78.7	84.5
1944 .....	72.1	76.2	65.8	66.4	342.1	550.8	69.2	76.7	77.1	80.0	85.1
1945 .....	75.5	78.8	68.2	71.7	309.3	489.5	74.1	79.8	81.5	83.2	86.0
1946 .....	81.6	82.2	79.3	81.3	124.7	153.6	87.0	88.7	89.3	89.3	90.9
1947 .....	87.7	86.7	91.9	87.9	92.6	89.8	95.7	96.6	92.9	93.5	92.6
1948 .....	93.4	91.6	97.7	95.7	92.3	87.7	99.7	96.4	95.9	96.3	95.9
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950 .....	105.6	104.7	102.5	109.1	106.6	108.4	103.8	104.9	103.3	103.8	102.9
1951 .....	113.4	110.1	111.6	121.6	119.0	128.1	105.4	109.6	107.9	106.6	106.4
1952 .....	118.4	115.7	111.1	127.9	136.3	155.1	111.1	113.6	112.1	109.8	111.5
1953 .....	123.2	121.4	113.1	131.9	144.2	166.9	112.5	118.0	115.7	115.5	115.3
1954 .....	129.9	127.4	118.7	140.6	151.3	177.6	114.8	121.1	117.3	121.4	121.0
1955 .....	136.5	134.7	117.8	149.2	156.3	182.3	119.8	127.1	119.9	125.3	126.1
1956 .....	141.5	138.2	119.5	159.1	158.9	185.4	120.9	129.4	127.0	135.3	133.9
1957 .....	150.9	147.5	128.0	169.1	163.7	188.5	128.4	136.1	130.6	141.0	141.4
1958 .....	156.1	155.5	127.6	170.5	171.3	192.5	142.5	146.0	135.2	148.6	147.9
1959 .....	163.5	167.3		157.6	175.0	192.7	153.4	151.5	141.4	158.9	158.5
1960 .....	169.5	174.4		161.9	177.8	190.9	161.1	161.1	147.4	166.6	166.7
1961 .....	175.5	181.3		166.5	183.9	194.1	166.9	175.3	152.2	179.3	178.7

	Service - producing industries										
	Community, recreation, business and personal service										
	Community service			Recreation service	Business service	Personal service					
	Health service		Total			Restaurants, cafes and taverns	Dyeing, cleaning, pressing and laundries	Hotels, motels and lodging houses	Other personal service <sup>13</sup>		
Total	Hospitals	Other health									
1949 weights .....	2.012	0.931	1.081	0.471	1.260	4.272	0.870	0.395	1.948	1.059	
1935 .....	48.1	46.6	49.4	45.9	42.9	52.9	30.2	33.3	38.7	105.0	
1936 .....	51.2	50.6	51.7	49.8	43.2	56.3	35.5	36.4	42.4	106.4	
1937 .....	55.1	53.2	56.8	52.9	45.2	60.9	40.2	39.4	46.5	112.3	
1938 .....	59.3	56.2	61.9	54.8	48.2	58.7	36.4	41.1	43.0	112.6	
1939 .....	61.4	58.2	64.1	55.1	49.5	58.5	36.2	43.2	43.0	110.8	
1940 .....	65.1	60.7	68.9	61.1	54.3	63.3	44.0	49.4	49.2	110.3	
1941 .....	67.6	62.2	72.2	65.0	59.3	70.7	58.8	57.3	58.0	108.7	
1942 .....	69.8	63.7	75.0	73.8	59.3	70.3	61.1	63.7	62.3	95.0	
1943 .....	72.3	66.5	77.3	82.6	63.4	72.5	74.9	67.9	68.2	80.2	
1944 .....	73.8	68.2	78.6	85.4	65.5	76.6	83.6	73.3	73.5	78.1	
1945 .....	79.2	71.2	86.0	89.0	70.1	82.3	90.7	77.7	79.8	81.6	
1946 .....	86.7	79.8	92.6	93.8	78.1	92.1	99.3	86.6	92.8	86.4	
1947 .....	92.5	86.6	97.6	92.4	86.4	94.4	99.8	89.3	98.2	84.8	
1948 .....	95.0	89.9	99.4	94.2	93.5	96.3	93.6	94.0	99.5	93.3	
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1950 .....	105.7	107.7	103.9	102.2	107.7	101.6	104.2	104.8	101.2	98.8	
1951 .....	108.5	114.1	103.6	106.3	114.8	107.3	104.1	108.8	109.0	106.1	
1952 .....	110.6	116.7	105.4	111.3	118.7	112.5	110.5	110.7	114.8	110.4	
1953 .....	120.3	129.3	112.5	111.2	120.9	114.9	114.3	115.9	116.1	112.8	
1954 .....	127.9	142.0	115.8	107.6	125.6	112.0	108.5	118.3	110.5	115.3	
1955 .....	131.9	146.2	119.5	97.8	129.7	114.1	111.3	124.8	111.8	116.5	
1956 .....	145.5	152.1	139.8	95.6	135.8	119.7	119.5	133.0	118.4	117.1	
1957 .....	150.5	162.2	140.4	93.7	142.3	121.1	119.1	135.3	120.2	119.0	
1958 .....	160.6	171.9	150.8	90.7	146.9	123.4	119.3	137.8	123.3	121.4	
1959 .....	172.9	187.8	160.1	84.9	154.0	126.6	124.2	136.0	128.5	121.5	
1960 .....	185.5	204.7	169.0	80.0	164.3	128.9	123.2	136.9	131.0	126.6	
1961 .....	197.1	223.1	174.7	76.2	168.4	129.1	121.5	145.8	127.2	132.6	

<sup>1</sup> Contract drilling (excluding drilling for oil and gas) is not included here but is shown in "other goods industries n.e.c."; prospecting is assumed to move with total mining.

<sup>2</sup> Repair service establishments classified to manufacturing are not included here but are shown in "other goods industries n.e.c.".

<sup>3</sup> See Appendix B for description of series.

<sup>4</sup> For industries not shown, see Appendix B.

<sup>5</sup> Warehousing is included from 1935 to 1945.

<sup>6</sup> Includes taxicab service, truck transportation (which includes warehousing from 1935-45), pipelines, international bridges, tunnels and ferries and other transportation.

<sup>7</sup> Includes radio and television broadcasting, telegraph and cable, Dominion post office and other communication.

<sup>8</sup> Includes manufacturers' sales branches, agents and brokers, petroleum bulk tank stations, assemblers of primary products and other wholesalers.

<sup>9</sup> Includes rents received by or accruing to individuals as well as imputed rents for government buildings.

<sup>10</sup> Includes life insurance, non-life insurance, insurance and real estate agents and agencies and other finance.

<sup>11</sup> Excludes postal service.

<sup>12</sup> Includes barbering and hairdressing, domestic service, undertaking, photography and other personal service n.e.c.

**TABLE 2. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Years, 1935 - 61**  
1949 = 100

	Gross Domestic Product	Agriculture	Gross Domestic Product less agriculture	Goods-producing industries	Goods-producing industries less agriculture	Service-producing industries	Index of Industrial Production						
							Commercial industries	Commercial less agriculture	Non-commercial industries	Total	Mining	Manufacturing	Electric power and gas utilities
1949 weights .....	100.000	10.714	89.286	53.080	42.366	46.920	91.729	81.015	8.271	32.231	3.245	27.340	1.646
1935 .....	49.7	95.0	46.2	49.2	41.7	50.2	48.5	44.7	61.3	41.4	60.8	39.0	39.1
1936 .....	52.4	85.0	49.6	51.9	45.9	52.9	51.4	48.3	62.5	45.7	68.3	43.0	42.1
1937 .....	56.7	85.5	54.2	58.1	52.8	55.5	55.9	53.0	65.4	52.3	79.4	49.2	46.1
1938 .....	56.5	109.5	52.5	58.0	49.4	55.2	55.4	50.9	68.7	49.6	83.7	45.3	46.3
1939 .....	60.2	126.8	55.2	63.3	53.0	57.3	59.1	53.6	71.8	53.3	90.3	48.7	49.7
1940 .....	69.2	127.8	64.6	72.5	63.0	66.2	66.7	61.5	96.4	63.9	96.2	60.4	55.9
1941 .....	80.6	106.6	77.9	83.7	78.1	77.9	78.3	73.1	127.4	80.1	101.0	78.7	64.2
1942 .....	95.0	164.2	89.5	102.1	90.9	88.5	88.2	81.7	168.8	94.7	99.1	96.1	72.2
1943 .....	99.0	102.4	97.4	99.0	95.7	99.2	88.8	86.5	210.1	100.5	88.8	104.0	77.2
1944 .....	103.0	126.2	100.2	101.4	95.1	104.7	91.5	87.8	227.7	101.3	79.7	106.1	78.2
1945 .....	97.0	94.8	95.9	89.5	86.2	104.3	86.8	84.7	210.1	90.1	77.2	92.9	75.7
1946 .....	89.8	109.4	87.4	88.2	82.8	91.6	88.1	85.3	108.4	83.8	74.3	85.2	79.4
1947 .....	93.8	102.8	92.7	93.4	91.0	94.2	94.0	92.8	91.4	91.5	78.5	93.2	89.8
1948 .....	97.1	106.1	96.0	98.3	96.3	95.8	97.4	96.3	93.3	96.4	90.0	97.3	94.8
1949 .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950 .....	106.4	106.2	106.4	107.4	107.7	105.2	106.5	106.6	104.8	106.9	109.5	106.2	113.2
1951 .....	114.6	120.9	113.8	117.7	116.9	111.1	114.6	113.8	114.0	116.6	123.4	115.0	129.4
1952 .....	122.7	148.8	119.8	127.0	121.5	117.8	122.4	119.0	125.5	120.9	131.0	118.5	140.7
1953 .....	126.7	136.3	125.5	130.3	128.7	122.7	126.2	124.9	132.1	129.1	142.1	126.4	147.9
1954 .....	123.9	104.3	126.2	123.5	128.4	124.3	122.5	124.9	138.9	128.5	158.7	122.9	161.4
1955 .....	136.3	132.1	136.8	139.2	141.1	132.9	135.7	136.1	143.1	142.3	185.2	134.7	183.3
1956 .....	147.7	141.7	148.4	152.5	155.2	142.3	147.8	148.6	146.8	154.9	212.3	145.1	204.9
1957 .....	147.0	117.5	150.5	148.3	156.0	145.6	146.5	150.4	152.3	155.4	227.8	142.9	220.3
1958 .....	148.9	125.1	151.7	149.1	155.1	148.7	148.0	151.0	159.2	154.4	227.0	140.7	239.1
1959 .....	156.5	125.2	160.2	155.9	163.7	157.1	155.7	159.7	165.2	166.1	251.1	149.8	268.7
1960 .....	158.5	128.0	162.1	156.7	163.9	160.5	157.3	161.2	171.1	167.4	253.3	149.3	298.0
1961 .....	161.4	116.0	186.8	157.9	168.6	165.3	159.7	165.5	179.7	172.9	286.9	153.0	317.7

CHART-26



CHART-27

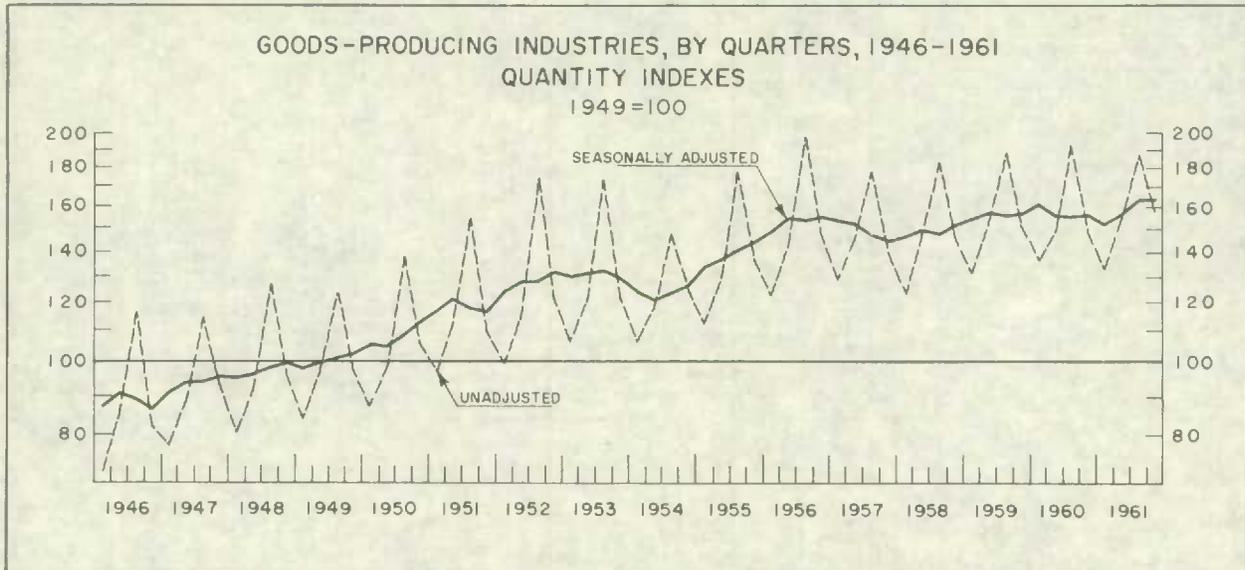


CHART-28

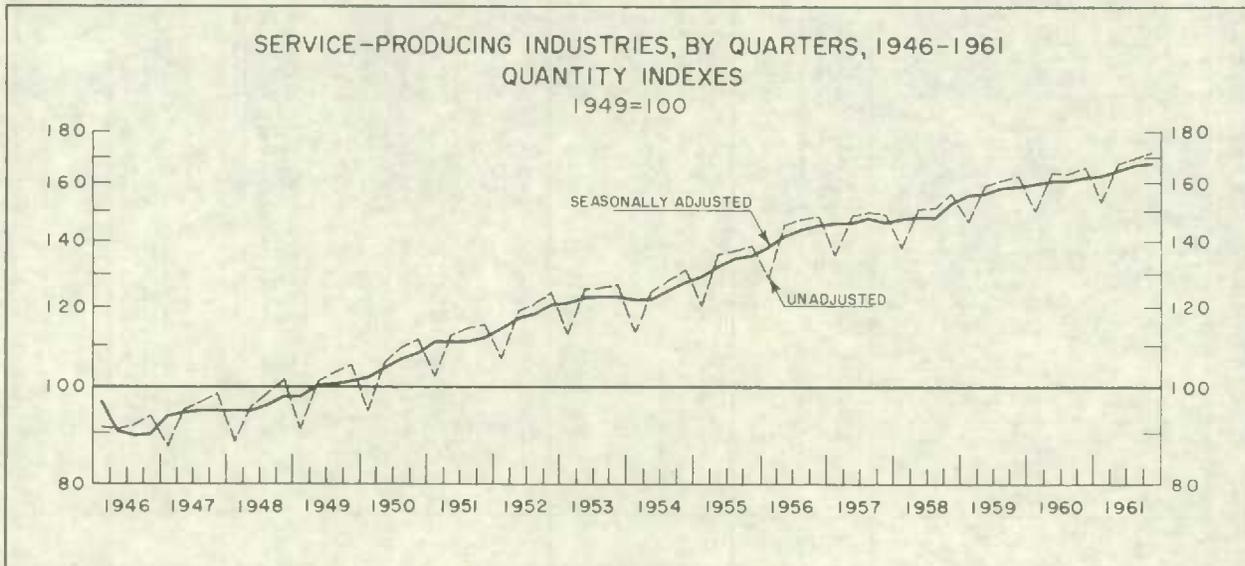


TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61

1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
Gross Domestic Product									
1946 .....	91.9	90.2	89.3	88.3	80.5	87.3	104.3	86.9	89.8
1947 .....	91.8	93.6	94.0	95.0	81.8	92.1	105.8	95.3	93.8
1948 .....	94.8	95.2	97.1	98.7	83.7	93.4	113.6	97.8	97.1
1949 .....	97.7	100.0	100.3	101.6	86.8	98.4	114.1	100.7	100.0
1950 .....	103.2	104.2	107.4	110.1	90.5	101.8	124.9	108.4	106.4
1951 .....	114.1	115.9	114.4	114.0	99.4	111.9	135.4	111.6	114.6
1952 .....	119.3	122.6	123.4	126.2	102.5	116.7	149.0	122.6	122.7
1953 .....	126.0	127.0	127.7	126.3	109.4	122.7	151.2	123.4	126.7
1954 .....	122.9	121.3	124.0	126.3	109.3	120.8	138.3	127.0	123.9
1955 .....	131.5	134.7	137.6	139.4	115.8	132.7	159.2	137.5	136.3
1956 .....	143.9	147.6	148.4	150.5	125.4	144.2	173.7	147.6	147.7
1957 .....	148.9	148.5	148.1	145.1	131.8	147.3	165.3	143.8	147.0
1958 .....	146.7	148.6	147.7	151.5	130.3	147.7	167.5	150.1	148.9
1959 .....	154.6	156.5	156.6	157.9	138.0	155.2	176.3	156.2	156.5
1960 .....	160.0	157.9	157.6	158.5	142.9	156.0	178.7	156.1	158.5
1961 .....	156.7	160.3	184.3	165.0	141.9	160.3	178.7	164.7	161.4
Goods-producing Industries									
1946 .....	87.7	90.2	89.1	86.8	71.3	84.5	115.7	81.2	88.2
1947 .....	90.5	93.2	93.7	95.1	77.5	89.8	113.9	92.5	93.4
1948 .....	95.0	95.9	98.1	99.4	80.1	91.7	126.9	94.4	98.3
1949 .....	97.7	99.6	100.1	101.8	83.4	95.9	123.7	97.0	100.0
1950 .....	104.3	104.1	108.2	111.9	87.0	98.8	138.5	105.4	107.4
1951 .....	116.9	120.4	117.4	115.8	96.9	111.4	154.1	108.3	117.7
1952 .....	123.8	127.5	127.8	131.0	99.1	114.6	173.6	121.0	127.0
1953 .....	130.0	130.7	131.9	129.0	106.4	120.5	173.5	120.5	130.3
1954 .....	123.4	120.4	123.1	125.5	105.6	117.4	147.7	123.4	123.5
1955 .....	133.4	136.8	140.4	143.2	111.8	130.0	178.8	136.5	139.2
1956 .....	149.1	152.8	152.4	155.3	122.5	143.2	197.1	147.3	152.5
1957 .....	151.8	150.8	148.6	144.3	128.7	146.1	178.9	139.5	148.3
1958 .....	146.6	149.6	147.9	150.9	123.8	145.3	182.0	145.1	149.1
1959 .....	153.8	157.1	155.2	157.4	130.9	152.0	189.8	150.8	155.9
1960 .....	160.2	155.9	155.2	155.7	136.7	149.6	192.5	147.8	156.7
1961 .....	151.7	156.7	182.1	162.6	132.8	154.1	186.7	158.3	157.9
Service-producing Industries									
1946 .....	96.5	90.2	89.4	89.9	91.0	90.4	91.5	93.4	91.6
1947 .....	93.3	94.1	94.4	94.8	86.8	94.7	96.7	98.4	94.2
1948 .....	94.6	94.4	95.9	97.9	87.9	95.3	98.6	101.5	95.8
1949 .....	97.8	100.3	100.5	101.3	90.6	101.3	103.2	104.9	100.0
1950 .....	102.0	104.2	106.5	108.1	94.3	105.2	109.6	111.7	105.2
1951 .....	111.0	110.9	111.0	112.0	102.3	112.5	114.1	115.4	111.1
1952 .....	114.2	117.1	118.4	120.7	106.4	119.2	121.2	124.4	117.8
1953 .....	121.4	122.9	123.0	123.2	112.8	125.3	125.9	126.7	122.7
1954 .....	122.3	122.4	125.0	127.3	113.7	124.7	127.8	131.1	124.3
1955 .....	129.3	132.3	134.3	135.2	120.5	135.7	137.1	138.5	132.9
1956 .....	137.9	141.6	143.8	145.1	128.7	145.2	147.2	148.0	142.3
1957 .....	145.7	145.9	147.4	145.9	135.3	148.6	149.8	148.8	145.6
1958 .....	146.9	147.6	147.5	152.1	137.5	150.5	150.9	155.8	148.7
1959 .....	155.4	155.8	158.1	158.5	146.0	158.9	161.0	162.4	157.1
1960 .....	159.7	160.2	160.4	161.7	150.0	163.3	163.1	165.6	160.5
1961 .....	162.3	164.4	166.8	167.8	152.3	167.3	169.7	171.9	165.3

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued**  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Agriculture</b>									
1946 .....	113.8	118.5	116.1	93.8	51.1	92.0	239.7	54.8	109.4
1947 .....	100.3	105.7	98.5	101.8	55.4	88.5	191.4	75.9	102.8
1948 .....	97.3	97.7	103.6	103.2	45.6	77.1	235.9	65.8	106.1
1949 .....	95.8	101.2	98.3	103.0	48.7	79.4	202.6	69.3	100.0
1950 .....	114.3	99.5	100.0	107.3	53.7	70.4	237.2	83.5	106.2
1951 .....	115.0	123.9	119.7	119.7	47.4	80.2	287.4	68.6	120.9
1952 .....	147.0	157.6	150.1	149.1	57.4	90.9	359.6	87.4	148.8
1953 .....	138.8	132.6	143.6	134.4	52.9	83.6	329.7	79.1	136.3
1954 .....	108.3	98.7	101.6	107.0	55.4	79.4	201.5	81.0	104.3
1955 .....	128.3	129.0	127.0	132.4	59.8	90.7	294.4	83.6	132.1
1956 .....	143.7	145.0	134.6	142.1	60.6	92.7	326.3	87.3	141.7
1957 .....	123.5	120.0	122.0	117.2	59.8	92.8	238.1	79.2	117.5
1958 .....	124.7	125.3	121.9	128.7	62.6	97.1	254.1	86.7	125.1
1959 .....	128.7	128.1	124.0	120.3	66.4	95.7	263.8	74.7	125.2
1960 .....	130.6	128.1	125.4	127.8	66.4	90.2	280.4	74.8	128.0
1961 .....	110.4	118.5	123.8	116.6	67.7	99.4	215.8	81.0	116.0
<b>Forestry</b>									
1946 .....	105.6	109.3	97.5	105.1	97.2	81.1	95.7	138.5	103.1
1947 .....	113.4	113.5	120.8	122.9	101.9	88.4	118.9	165.6	118.7
1948 .....	135.9	115.5	116.7	111.4	118.5	90.8	117.0	148.8	118.8
1949 .....	95.2	97.0	99.7	102.0	84.3	84.0	104.2	127.5	100.0
1950 .....	89.9	114.4	130.8	130.7	78.0	95.8	134.6	167.2	118.9
1951 .....	146.2	166.4	140.9	130.7	122.2	128.1	143.5	172.2	141.5
1952 .....	157.0	126.1	120.5	128.5	127.2	103.6	129.5	158.5	129.7
1953 .....	122.1	119.7	119.8	124.0	104.3	102.8	130.1	157.6	123.7
1954 .....	118.6	121.0	135.0	135.1	97.1	103.9	148.3	164.5	128.4
1955 .....	130.1	132.8	132.7	141.2	109.2	113.1	148.3	172.2	135.7
1956 .....	144.9	142.8	146.7	142.6	116.7	121.0	164.9	171.0	143.4
1957 .....	143.2	157.2	128.7	108.0	113.6	138.4	146.8	123.2	130.5
1958 .....	111.5	115.4	115.4	117.6	91.1	108.3	132.4	130.6	115.6
1959 .....	128.2	129.1	123.1	139.9	104.8	119.3	141.6	156.7	130.6
1960 .....	144.4	136.9	149.7	137.3	116.0	123.6	172.1	155.5	141.8
1961 .....	128.9	130.4	134.7	130.4	104.5	120.5	154.3	143.8	130.8
<b>Fishing and trapping</b>									
1946 .....	70.7	88.7	86.3	85.2	47.1	85.8	120.8	94.4	87.1
1947 .....	65.7	77.8	83.4	82.3	42.1	73.4	116.5	92.1	81.0
1948 .....	91.8	86.3	85.3	92.6	51.4	80.0	114.9	103.7	87.6
1949 .....	99.2	102.0	99.5	100.0	58.6	95.4	140.2	105.7	100.0
1950 .....	97.1	98.9	107.4	116.0	55.6	103.7	155.8	120.2	108.9
1951 .....	112.1	112.1	111.5	106.1	61.1	111.3	161.9	111.2	111.5
1952 .....	123.8	113.6	97.0	87.8	66.9	112.6	131.8	94.9	101.6
1953 .....	87.9	100.0	104.2	113.2	56.2	99.2	146.5	112.3	103.6
1954 .....	102.9	102.1	115.4	123.8	58.8	98.5	163.3	128.7	112.3
1955 .....	105.5	111.5	106.2	102.7	71.0	102.9	147.8	100.6	105.6
1956 .....	161.6	116.4	103.4	106.1	83.0	113.1	150.9	99.6	111.6
1957 .....	123.0	103.2	109.6	93.5	68.8	99.6	158.4	95.2	105.5
1958 .....	105.1	112.5	121.7	120.2	66.7	114.8	176.6	113.2	117.8
1959 .....	88.4	109.2	100.3	120.6	55.1	110.6	142.8	114.8	105.9
1960 .....	86.6	112.7	98.2	103.5	55.9	117.5	136.4	106.4	104.1
1961 .....	141.9	109.0	109.5	120.2	77.2	112.9	155.5	117.1	115.7

TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Mining <sup>1</sup>									
1946 .....	74.9	75.3	77.0	74.5	73.4	74.1	74.3	75.5	74.3
1947 .....	74.0	76.4	83.2	83.6	71.9	75.8	80.6	85.4	78.5
1948 .....	81.1	90.8	94.9	95.1	79.1	90.3	92.6	98.1	90.0
1949 .....	94.0	93.9	105.3	106.1	91.4	93.6	105.2	109.7	100.0
1950 .....	106.9	107.6	109.7	116.6	103.2	106.4	108.8	119.7	109.5
1951 .....	118.0	124.9	128.2	124.7	112.5	123.5	129.4	128.2	123.4
1952 .....	125.1	132.4	133.8	136.0	118.8	130.0	135.6	139.6	131.0
1953 .....	138.9	142.2	143.6	140.0	133.6	140.4	148.9	145.5	142.1
1954 .....	148.7	151.9	159.9	166.0	144.4	150.9	167.2	172.1	158.7
1955 .....	173.0	176.8	186.2	197.1	169.3	172.8	197.7	202.0	185.2
1956 .....	206.7	204.5	214.0	221.6	197.8	201.3	228.0	224.0	212.3
1957 .....	223.8	235.4	227.1	224.3	215.9	228.8	240.4	226.3	227.8
1958 .....	231.7	229.3	223.3	222.3	224.7	223.7	235.4	224.4	227.0
1959 .....	243.0	247.6	252.3	260.0	237.3	241.5	265.0	260.5	251.1
1960 .....	260.1	252.3	251.3	248.8	256.0	247.5	260.6	248.9	253.3
1961 .....	250.9	262.6	271.9	279.6	246.0	260.3	281.8	279.7	266.9
Metals									
1946 .....	74.3	73.5	75.5	75.2	72.2	74.1	73.8	72.9	73.2
1947 .....	75.8	81.5	81.8	83.4	74.3	82.1	79.9	82.1	79.6
1948 .....	82.0	88.2	90.1	93.9	81.5	89.4	88.7	94.0	88.4
1949 .....	96.2	98.4	100.4	104.8	93.7	100.1	100.7	105.2	100.0
1950 .....	100.7	103.2	105.3	107.1	97.8	103.8	104.6	107.9	103.5
1951 .....	107.7	107.5	109.0	108.4	105.0	108.3	108.8	109.4	107.9
1952 .....	109.4	111.0	111.6	111.8	106.5	110.9	111.1	112.6	110.3
1953 .....	119.1	117.9	111.9	104.8	119.5	120.3	114.8	108.0	115.7
1954 .....	114.9	126.5	128.8	132.9	116.5	129.7	132.6	137.1	129.0
1955 .....	130.9	138.3	143.7	143.3	131.5	138.6	154.9	145.6	142.7
1956 .....	143.3	151.5	153.6	151.2	135.8	151.8	165.5	151.1	151.0
1957 .....	159.0	164.1	172.5	182.8	145.9	164.2	187.5	182.5	170.0
1958 .....	185.7	190.9	180.2	164.4	174.1	189.3	193.5	164.3	180.3
1959 .....	191.1	199.6	202.8	212.1	179.2	198.4	217.8	209.7	201.3
1960 .....	212.1	192.7	195.8	193.3	198.5	193.4	208.9	190.9	197.9
1961 .....	195.4	165.2	191.7	195.2	181.1	186.3	204.9	194.4	191.7
Non-metals									
1946 .....	88.2	98.9	102.0	104.7	79.1	96.1	105.5	105.7	96.6
1947 .....	113.8	108.6	111.8	113.8	101.4	105.6	115.5	114.2	109.2
1948 .....	113.9	121.2	128.6	122.0	102.3	118.8	131.1	123.1	118.8
1949 .....	76.8	44.0	141.5	137.2	87.1	43.0	146.2	141.9	100.0
1950 .....	138.4	137.3	143.9	161.6	127.7	132.6	138.7	157.8	139.1
1951 .....	164.4	171.9	161.4	156.5	149.0	165.7	157.1	153.4	156.3
1952 .....	168.7	162.2	159.8	161.9	153.5	156.9	153.4	158.1	155.5
1953 .....	161.7	161.7	156.0	150.6	150.6	158.3	153.2	149.6	152.9
1954 .....	155.7	159.3	168.4	172.8	147.0	157.9	168.0	172.8	161.4
1955 .....	173.9	179.7	189.5	200.0	163.8	175.8	185.4	195.8	180.2
1956 .....	192.4	169.0	188.6	181.0	179.0	192.1	193.8	185.3	187.8
1957 .....	186.2	187.1	173.1	172.5	173.7	187.9	176.4	177.9	179.0
1958 .....	165.0	157.7	171.7	184.5	152.6	180.1	174.3	196.8	170.9
1959 .....	185.0	195.7	191.0	188.7	170.0	199.1	194.0	202.5	191.4
1960 .....	191.1	196.0	185.9	194.9	177.0	198.1	188.5	206.7	192.6
1961 .....	210.2	208.4	210.3	214.0	194.5	212.3	212.5	227.6	211.7

<sup>1</sup> Contract drilling, other than drilling for oil and gas, is included in "Other goods industries, n.e.c." This group is not published on a quarterly basis. See Appendices B and C.

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued**  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
<b>Fuels</b>									
1946 .....	74.6	74.7	75.7	65.8	81.1	69.0	65.3	73.6	72.2
1947 .....	58.3	55.8	77.3	73.5	63.5	51.8	66.4	82.2	66.0
1948 .....	67.1	88.0	94.7	88.7	72.0	80.3	82.7	97.8	83.2
1949 .....	95.1	97.1	104.3	103.1	101.2	90.5	95.4	112.9	100.0
1950 .....	111.7	106.3	107.9	121.8	115.4	99.4	102.0	131.5	112.1
1951 .....	122.4	144.5	157.0	147.1	123.8	137.2	155.2	157.6	143.5
1952 .....	143.0	166.1	169.7	175.1	141.7	156.9	171.0	186.0	163.9
1953 .....	167.6	186.7	205.7	207.8	165.0	174.6	211.5	219.7	192.7
1954 .....	214.9	198.3	217.5	229.0	211.5	185.6	225.0	240.1	215.8
1955 .....	256.6	253.6	271.9	307.6	256.7	237.1	279.3	319.7	273.2
1956 .....	339.7	316.4	345.2	378.4	345.3	300.0	348.4	384.8	344.7
1957 .....	363.0	395.4	353.7	320.6	385.0	366.9	354.3	326.6	358.2
1958 .....	338.4	317.0	317.2	343.9	362.2	293.7	314.9	347.3	329.5
1959 .....	357.9	352.8	364.6	373.8	388.9	327.1	360.5	375.9	363.1
1960 .....	376.5	390.2	378.6	372.7	414.6	365.5	367.1	373.6	380.2
1961 .....	369.2	431.8	447.4	465.9	408.0	416.0	436.1	462.8	430.7
<b>Manufacturing<sup>2</sup></b>									
1946 .....	83.7	85.2	84.4	87.5	82.0	86.2	84.9	87.7	85.2
1947 .....	91.6	92.8	94.0	94.7	90.1	94.1	94.0	94.7	93.2
1948 .....	96.0	96.7	96.9	99.2	94.2	98.1	97.5	99.2	97.3
1949 .....	98.6	100.1	100.3	100.6	96.7	101.9	100.9	100.5	100.0
1950 .....	100.9	103.5	108.6	111.9	99.0	105.5	108.9	111.6	106.2
1951 .....	115.4	116.8	114.9	112.4	113.0	119.0	115.5	112.2	115.0
1952 .....	114.2	116.1	119.5	124.6	111.9	118.5	119.5	124.2	118.5
1953 .....	127.1	127.3	126.1	124.2	125.2	130.0	126.3	123.9	126.4
1954 .....	123.9	121.7	122.4	122.7	121.3	124.4	122.5	123.3	122.9
1955 .....	128.3	133.1	138.3	138.8	125.3	136.6	137.4	139.5	134.7
1956 .....	140.5	145.3	146.5	148.0	136.8	148.5	146.3	148.9	145.1
1957 .....	147.3	144.1	142.0	137.4	143.7	146.9	142.7	138.4	142.9
1958 .....	137.2	141.0	140.1	143.6	133.2	143.6	141.7	144.1	140.7
1959 .....	146.9	151.0	149.9	151.7	142.6	154.4	150.3	152.0	149.8
1960 .....	153.6	148.8	147.0	148.4	148.9	152.3	146.9	148.9	149.3
1961 .....	147.7	150.8	155.4	158.8	143.3	153.9	155.1	159.7	153.0
<b>Non-durable manufacturing</b>									
1946 .....	89.5	89.1	89.0	91.6	87.2	89.0	89.7	93.1	89.8
1947 .....	92.8	93.4	93.1	93.6	91.4	93.5	93.0	94.9	93.2
1948 .....	95.4	95.6	96.1	97.5	93.2	96.0	97.0	98.9	96.3
1949 .....	97.9	99.7	100.7	101.4	95.2	100.1	101.7	103.0	100.0
1950 .....	102.1	104.6	107.4	109.9	99.2	105.0	108.2	111.6	106.0
1951 .....	110.9	112.7	110.7	108.4	107.2	113.1	112.4	110.2	110.8
1952 .....	110.2	110.6	113.8	118.1	106.6	111.3	115.0	119.9	113.2
1953 .....	119.0	120.4	120.8	119.9	115.8	121.2	122.1	121.5	120.2
1954 .....	120.1	120.2	121.1	123.2	116.0	121.0	122.9	125.0	121.2
1955 .....	125.9	129.0	131.3	134.9	121.5	129.8	133.3	136.9	130.4
1956 .....	136.2	138.1	138.8	140.0	131.5	138.6	140.1	142.3	138.1
1957 .....	141.7	139.9	140.5	136.1	136.9	140.6	143.0	136.4	139.7
1958 .....	135.5	140.2	142.4	146.5	130.7	140.6	145.3	148.8	141.3
1959 .....	146.8	150.4	150.9	152.2	141.5	151.5	153.3	153.9	150.1
1960 .....	153.9	150.8	150.6	152.3	147.2	151.8	153.3	154.7	151.8
1961 .....	153.3	155.9	158.6	161.2	146.8	156.7	161.0	163.4	157.0

<sup>2</sup> Repair service establishments classified to manufacturing are included in "Other goods industries, n.e.c." This group is not published on a quarterly basis. See Appendices B and C.

TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued

1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Foods and beverages									
1946 .....	100.2	96.0	98.1	98.5	85.9	93.0	107.6	105.4	98.0
1947 .....	97.4	97.5	95.6	99.1	83.7	95.4	105.0	103.1	97.2
1948 .....	100.6	96.9	96.2	98.6	86.1	95.8	108.3	103.6	98.5
1949 .....	96.1	99.9	101.8	101.6	80.2	99.2	113.7	106.9	100.0
1950 .....	100.6	105.1	104.5	104.9	85.2	104.2	116.3	109.7	103.8
1951 .....	105.5	106.9	107.8	106.9	88.6	106.0	121.1	111.3	106.8
1952 .....	110.9	112.7	113.5	115.9	92.0	112.1	126.9	122.7	113.5
1953 .....	115.1	116.1	117.6	119.5	97.6	115.7	131.4	124.8	117.4
1954 .....	119.1	119.8	119.4	122.9	100.6	119.8	133.5	128.3	120.6
1955 .....	123.6	125.5	128.7	127.6	104.1	125.1	144.1	133.9	126.6
1956 .....	133.3	134.8	132.2	134.2	111.4	134.0	146.7	140.3	133.1
1957 .....	134.7	133.0	138.0	135.4	113.2	132.8	155.0	141.4	135.8
1958 .....	138.0	142.0	140.1	146.3	117.1	141.0	157.0	152.6	141.9
1959 .....	143.6	148.6	149.6	148.8	122.3	148.1	165.9	154.0	147.6
1960 .....	152.0	149.9	149.2	149.9	127.9	150.0	165.8	157.2	150.2
1961 .....	153.4	152.4	155.3	156.3	128.4	152.0	173.2	163.1	154.2
Tobacco and tobacco products									
1946 .....	90.0	82.9	97.3	92.9	88.6	83.7	92.5	97.6	90.6
1947 .....	94.8	90.2	90.6	98.9	93.2	93.0	86.3	101.1	93.4
1948 .....	91.1	91.8	93.3	97.1	90.0	95.4	88.1	100.2	93.4
1949 .....	98.5	100.2	100.4	102.0	94.9	105.7	95.0	104.0	100.0
1950 .....	109.4	103.9	100.6	100.0	107.1	110.7	94.7	101.0	103.4
1951 .....	113.0	96.1	73.6	98.6	109.2	103.6	67.7	99.5	95.0
1952 .....	96.4	112.1	117.7	106.5	92.1	122.4	110.8	106.7	108.0
1953 .....	110.3	123.7	123.1	121.4	104.9	135.5	119.1	121.8	120.3
1954 .....	125.4	120.8	122.2	129.1	117.5	135.3	117.2	128.9	124.7
1955 .....	132.4	134.4	132.1	142.1	125.4	150.2	124.8	141.8	135.5
1956 .....	139.2	145.6	144.9	153.7	133.3	160.4	136.3	153.6	145.9
1957 .....	160.8	162.7	164.0	159.2	154.7	176.1	157.0	156.2	161.0
1958 .....	169.2	171.0	179.6	176.6	163.5	183.3	173.5	172.6	173.2
1959 .....	176.7	175.7	172.2	191.8	173.2	189.3	167.3	189.6	179.9
1960 .....	180.5	172.3	179.6	193.8	177.3	185.4	173.7	191.5	182.0
1961 .....	189.2	194.5	195.2	198.7	185.8	207.4	163.6	197.6	193.6
Rubber products									
1946 .....	106.3	111.7	36.3	90.9	116.1	113.8	31.7	96.5	89.5
1947 .....	123.9	129.5	135.1	123.2	135.0	132.0	112.7	130.0	127.4
1948 .....	123.6	118.4	108.3	113.2	134.3	120.9	91.1	119.2	116.4
1949 .....	107.4	99.9	94.5	97.0	115.8	102.3	80.4	101.4	100.0
1950 .....	105.2	108.5	126.4	129.2	112.7	111.7	108.7	134.1	116.8
1951 .....	134.4	132.3	127.1	105.7	142.9	137.1	110.3	109.1	124.9
1952 .....	112.3	117.1	116.8	128.5	118.8	121.6	102.7	132.1	118.9
1953 .....	132.9	130.9	130.4	127.2	139.5	136.7	114.4	130.6	130.3
1954 .....	122.7	118.2	115.7	119.5	127.9	124.5	102.5	121.9	119.2
1955 .....	133.4	136.9	140.7	152.6	138.5	143.9	124.9	156.7	141.0
1956 .....	143.9	155.2	160.6	157.8	148.4	162.7	142.1	162.7	154.0
1957 .....	161.2	149.5	141.8	136.8	164.4	158.7	125.9	144.1	147.8
1958 .....	122.1	132.8	146.9	148.1	124.0	139.1	130.9	154.9	137.2
1959 .....	162.5	168.4	159.8	152.6	165.4	174.4	144.4	160.2	161.1
1960 .....	158.2	137.3	139.1	134.9	162.5	144.4	126.5	140.0	143.3
1961 .....	128.7	143.9	152.7	159.1	131.9	149.3	137.9	163.7	146.7

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued**  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Leather products <span style="float: right;">S/C 47367</span>									
1946 .....	120.0	126.0	131.4	120.3	127.0	129.2	118.7	121.2	124.0
1947 .....	120.0	113.7	102.8	98.7	127.5	116.1	92.9	98.8	109.1
1948 .....	98.0	93.8	93.2	97.3	104.3	95.5	84.5	97.9	95.5
1949 .....	97.6	101.5	103.6	97.9	104.1	103.4	94.3	98.3	100.0
1950 .....	94.1	90.6	96.1	101.7	100.2	92.4	88.4	101.2	95.6
1951 .....	99.9	95.6	84.5	79.6	106.7	98.3	78.5	78.3	90.4
1952 .....	88.0	99.1	107.0	111.2	94.5	102.1	99.1	108.4	101.0
1953 .....	112.3	109.3	103.7	99.8	120.2	113.1	95.2	96.8	106.4
1954 .....	100.4	100.9	102.0	97.4	107.9	105.1	93.9	94.0	100.2
1955 .....	101.4	104.3	107.2	115.3	109.1	108.0	98.9	111.7	106.9
1956 .....	115.4	115.4	115.1	118.7	124.4	119.2	105.9	113.1	115.6
1957 .....	116.4	115.7	116.0	114.0	125.6	119.1	106.5	111.3	115.6
1958 .....	110.9	110.9	117.9	118.4	119.4	114.0	108.5	115.7	114.4
1959 .....	118.7	124.8	121.4	117.8	127.3	127.6	111.8	114.4	120.3
1960 .....	115.1	106.8	112.1	114.0	122.1	108.4	105.1	111.7	111.8
1961 .....	118.3	123.9	125.0	128.6	126.4	125.5	116.6	126.5	123.8
Textiles <span style="float: right;">S/C</span>									
1946 .....	89.7	87.6	87.4	89.7	95.9	89.1	82.6	87.2	88.7
1947 .....	92.6	95.2	95.2	92.9	99.0	96.5	89.5	91.0	94.0
1948 .....	94.4	96.9	99.3	99.0	100.5	98.0	92.8	97.8	97.3
1949 .....	98.7	98.7	101.0	102.0	104.8	99.6	93.8	101.8	100.0
1950 .....	104.9	108.1	116.1	121.3	111.1	109.2	107.6	122.1	112.5
1951 .....	119.6	123.6	107.3	100.7	126.4	124.9	99.2	102.0	113.1
1952 .....	100.0	94.2	104.3	113.6	105.1	95.3	95.6	115.5	102.9
1953 .....	113.8	113.6	108.1	96.2	119.5	115.1	98.8	98.2	107.9
1954 .....	90.9	90.1	95.7	100.0	94.7	91.8	88.6	102.2	94.3
1955 .....	108.8	114.2	114.3	118.5	113.7	115.3	105.2	121.5	114.0
1956 .....	115.4	116.1	118.9	120.4	120.7	117.3	107.5	123.5	117.3
1957 .....	121.7	118.6	117.7	110.9	127.5	119.5	109.0	114.4	117.6
1958 .....	100.1	107.8	112.9	117.1	104.1	108.1	105.2	121.9	109.9
1959 .....	121.7	128.2	128.5	122.8	125.6	129.3	117.5	125.3	124.4
1960 .....	126.9	122.6	116.7	123.9	130.5	124.7	109.2	125.6	122.5
1961 .....	128.6	132.2	136.6	142.4	131.1	135.3	127.4	144.5	134.6
Clothing									
1946 .....	94.6	94.9	95.5	95.7	102.0	93.7	92.1	93.2	95.3
1947 .....	93.0	92.5	91.5	92.0	104.0	91.2	85.1	88.7	92.2
1948 .....	96.2	96.9	96.2	99.1	103.7	95.3	94.8	96.8	97.6
1949 .....	99.6	100.0	100.2	100.3	107.0	98.3	96.8	98.0	100.0
1950 .....	100.1	101.0	102.1	101.9	107.1	99.0	99.0	100.3	101.3
1951 .....	104.0	102.7	99.6	97.5	108.0	100.4	98.7	97.6	101.2
1952 .....	100.9	110.1	115.2	121.8	110.4	109.3	109.7	116.4	111.4
1953 .....	119.3	117.2	114.0	109.3	128.8	115.5	109.4	108.2	115.0
1954 .....	110.1	107.9	108.9	108.6	117.2	105.7	105.6	107.2	108.9
1955 .....	108.3	111.3	114.6	116.9	114.5	108.1	111.9	116.5	112.8
1956 .....	117.1	117.3	117.5	118.5	123.5	113.6	114.7	118.7	117.6
1957 .....	118.8	118.7	116.0	111.8	124.8	115.1	115.7	111.5	116.8
1958 .....	113.9	113.2	115.8	114.6	119.6	109.6	114.4	113.9	114.4
1959 .....	111.6	116.0	113.3	110.6	116.8	112.7	113.3	109.6	113.1
1960 .....	110.8	108.3	107.4	107.2	115.1	103.1	107.1	106.2	107.9
1961 .....	107.9	106.7	107.9	112.0	111.7	102.3	107.8	106.4	107.1

TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued

1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Paper products									
1946	76.7	79.5	82.4	85.2	77.5	80.6	81.0	84.7	81.0
1947	87.8	88.3	89.6	90.7	88.5	89.5	88.0	90.2	89.1
1948	92.4	95.8	95.7	95.7	92.9	97.1	94.1	95.5	94.9
1949	99.5	98.8	99.3	102.1	99.9	99.9	98.2	102.2	100.0
1950	102.8	107.2	112.4	114.7	102.4	108.1	111.5	115.2	109.3
1951	114.6	119.0	119.1	117.3	113.7	119.7	118.4	117.9	117.5
1952	117.7	109.8	111.9	114.1	116.9	110.3	111.8	114.7	113.4
1953	115.1	117.9	118.9	120.7	113.9	118.8	118.6	121.2	118.1
1954	121.9	124.3	125.1	124.9	120.8	125.2	124.9	125.5	124.1
1955	126.6	129.9	131.5	135.5	125.0	131.8	131.6	135.4	131.0
1956	136.8	137.7	138.7	138.2	135.1	139.6	139.2	137.4	137.8
1957	139.8	138.2	136.4	127.3	138.4	139.9	137.2	126.4	135.5
1958	128.1	135.3	136.8	141.6	126.7	137.2	138.1	140.4	135.6
1959	139.6	145.0	144.4	150.2	137.3	147.1	145.1	149.4	144.7
1960	147.9	145.8	148.7	150.2	144.4	149.3	148.9	151.0	148.4
1961	149.6	152.7	155.1	156.1	145.9	155.0	154.8	157.8	153.4
Printing, publishing and allied industries									
1946	72.8	74.7	79.3	80.6	72.5	74.9	79.0	81.1	76.9
1947	82.0	82.7	83.4	86.0	81.6	83.1	82.8	86.6	83.6
1948	89.1	91.9	94.1	95.1	88.8	92.4	93.1	96.0	92.6
1949	96.9	101.9	101.1	100.2	96.5	102.3	99.7	101.6	100.0
1950	103.6	100.2	97.3	104.6	103.1	100.4	95.6	106.5	101.5
1951	104.5	104.1	106.8	105.4	103.8	104.2	104.9	107.7	105.1
1952	104.8	106.1	107.9	111.0	104.1	106.3	105.9	113.5	107.5
1953	113.3	113.9	114.2	117.0	112.4	114.5	112.2	119.5	114.7
1954	118.1	121.0	122.6	124.8	117.1	121.8	120.4	127.2	121.6
1955	125.1	126.3	126.6	130.5	123.9	127.5	124.5	132.7	127.1
1956	132.9	136.2	140.3	140.1	131.3	137.3	138.2	142.6	137.3
1957	142.1	140.3	137.5	132.0	141.0	142.3	136.0	133.5	138.2
1958	132.0	132.4	132.6	139.4	131.3	134.4	131.4	140.7	134.4
1959	137.2	142.7	143.1	149.9	136.0	144.5	140.9	151.3	143.2
1960	148.3	144.4	144.1	150.1	145.9	147.7	140.7	151.9	146.5
1961	147.0	145.5	148.5	152.4	146.2	147.0	144.5	155.0	148.2
Products of petroleum and coal									
1946	73.0	73.5	72.3	78.1	64.2	74.0	78.7	80.5	74.3
1947	78.9	79.3	79.5	81.2	69.3	80.1	86.2	83.7	79.8
1948	84.4	88.8	92.4	93.1	74.5	89.2	100.0	96.0	89.9
1949	94.8	99.8	101.1	102.8	84.7	100.2	109.3	105.6	100.0
1950	104.2	111.0	114.8	116.3	94.3	110.4	123.7	119.0	111.9
1951	117.2	127.8	133.2	133.2	108.5	126.7	143.1	135.6	126.5
1952	133.0	132.1	144.0	150.6	126.1	128.2	153.6	152.4	140.1
1953	151.0	149.0	155.2	158.7	145.7	144.0	164.7	159.6	153.5
1954	166.7	165.5	161.8	165.7	162.6	158.6	172.0	167.2	165.0
1955	178.2	192.3	189.0	194.2	174.2	182.7	200.9	195.2	188.3
1956	206.1	207.7	222.8	226.5	202.1	197.4	237.1	227.7	216.1
1957	227.0	228.5	222.6	216.4	222.5	216.2	237.7	217.8	223.5
1958	217.0	208.9	212.0	227.1	212.8	197.5	228.4	228.6	216.6
1959	242.2	240.7	237.3	249.2	238.6	227.3	249.8	250.1	241.5
1960	254.1	260.3	245.2	249.0	254.6	243.9	254.8	249.0	250.6
1961	246.5	266.7	259.0	262.2	246.9	256.4	265.5	264.5	258.8

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 — Continued**

1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Chemicals and allied products									
1946 .....	87.0	86.5	86.1	88.8	84.4	89.0	85.6	89.1	87.0
1947 .....	87.0	90.6	94.0	91.3	84.7	93.5	93.6	91.6	90.8
1948 .....	93.6	95.0	96.8	97.2	91.3	98.2	96.3	97.4	95.7
1949 .....	98.3	99.5	100.2	101.6	95.4	103.0	100.0	101.6	100.0
1950 .....	102.2	105.4	109.8	113.7	99.0	108.9	109.4	112.9	107.7
1951 .....	116.5	118.3	121.8	123.0	113.0	122.7	121.9	122.3	120.0
1952 .....	122.4	121.8	120.4	125.0	119.2	126.1	120.7	123.3	122.3
1953 .....	130.6	137.0	145.0	146.5	127.9	141.7	145.3	144.4	139.9
1954 .....	149.7	150.0	151.9	155.9	146.8	155.7	152.2	153.6	152.1
1955 .....	158.2	160.7	166.7	176.5	155.3	167.6	166.5	173.2	165.5
1956 .....	172.4	175.8	175.3	175.6	171.5	181.4	171.2	175.2	174.8
1957 .....	181.7	178.3	183.6	189.9	179.3	183.8	180.3	190.1	183.4
1958 .....	187.5	199.0	203.0	203.3	184.6	205.3	198.9	203.1	198.0
1959 .....	206.1	203.8	211.9	213.7	201.9	210.4	208.5	212.7	208.4
1960 .....	220.7	218.2	223.5	216.5	215.0	226.8	221.8	215.4	219.7
1961 .....	219.2	222.9	224.4	222.7	214.7	229.3	223.2	221.1	222.1
Durable manufacturing									
1946 .....	76.9	80.5	79.0	82.7	75.9	82.8	79.4	81.3	79.9
1947 .....	90.2	92.1	95.1	96.1	88.7	94.7	95.3	94.5	93.3
1948 .....	96.7	97.8	97.9	101.1	95.3	100.7	98.1	99.6	98.4
1949 .....	99.5	100.6	99.8	99.6	98.4	104.0	100.0	97.7	100.0
1950 .....	99.6	102.3	110.0	114.1	98.7	106.1	109.8	111.5	106.5
1951 .....	120.8	121.6	120.0	117.1	119.8	125.9	119.1	114.6	119.9
1952 .....	118.8	122.6	126.1	132.3	118.1	127.0	124.8	129.2	124.8
1953 .....	136.6	135.3	132.3	129.2	136.1	140.4	131.3	126.7	133.6
1954 .....	128.2	123.5	124.0	122.2	127.4	128.4	121.9	121.4	124.8
1955 .....	131.2	138.0	146.5	143.5	129.7	144.4	142.2	142.7	139.7
1956 .....	145.6	153.7	155.6	157.5	143.0	160.0	153.6	156.5	153.3
1957 .....	153.9	149.0	143.7	139.0	151.6	154.2	142.4	138.4	146.7
1958 .....	139.1	141.9	137.4	140.2	136.2	147.0	137.7	138.7	139.9
1959 .....	147.0	151.6	148.9	151.1	143.9	157.7	146.8	149.7	149.5
1960 .....	153.2	146.5	142.8	143.9	151.1	152.9	139.5	142.2	146.4
1961 .....	141.3	144.7	151.8	156.1	139.2	150.8	148.3	155.4	148.4
Wood products									
1946 .....	82.1	85.1	89.4	90.4	78.3	88.0	102.0	78.9	86.8
1947 .....	95.9	97.0	100.2	99.2	91.2	100.2	114.4	87.0	98.2
1948 .....	101.7	101.8	99.6	99.0	96.5	105.2	112.6	87.8	100.6
1949 .....	97.3	101.2	99.2	101.7	92.4	105.7	111.4	90.5	100.0
1950 .....	95.5	104.4	113.6	118.2	91.6	108.6	127.3	105.2	108.2
1951 .....	119.5	119.0	112.6	107.9	114.2	123.0	125.2	96.9	114.8
1952 .....	110.6	111.5	115.8	127.3	106.8	113.9	127.5	114.8	115.8
1953 .....	132.7	127.8	122.8	117.5	129.2	130.3	134.9	106.9	125.4
1954 .....	116.9	121.9	126.5	132.0	114.1	123.0	139.2	120.4	124.2
1955 .....	137.8	133.9	135.5	139.5	133.4	134.5	148.9	128.8	136.4
1956 .....	141.1	137.5	138.6	135.8	136.6	138.1	152.3	125.9	138.3
1957 .....	127.7	130.1	127.0	122.3	124.6	131.7	138.9	114.1	127.3
1958 .....	126.4	130.7	133.1	138.9	123.9	131.8	143.3	129.2	132.0
1959 .....	140.6	144.8	122.3	142.4	137.2	146.6	131.1	131.5	136.6
1960 .....	140.8	135.7	134.5	134.1	138.3	138.7	143.2	123.7	136.0
1961 .....	134.4	136.8	142.7	146.4	132.7	139.7	151.4	134.8	139.6

TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
<b>Iron and steel products</b>									
1946	81.0	81.3	76.8	83.7	81.9	83.2	74.2	83.8	80.8
1947	88.9	93.4	96.4	96.2	89.9	95.3	92.8	96.6	93.6
1948	96.0	100.2	102.7	105.1	99.1	102.1	99.1	105.6	101.5
1949	106.1	100.8	95.9	96.9	107.3	102.7	92.7	97.4	100.0
1950	95.4	98.0	106.3	110.8	96.1	99.9	102.3	111.8	102.5
1951	114.7	119.0	117.4	117.1	115.2	121.3	113.5	118.1	117.0
1952	119.0	117.8	118.3	120.6	119.3	120.2	115.2	121.0	118.9
1953	119.4	117.1	113.7	110.6	118.4	119.7	111.9	111.1	115.3
1954	106.8	106.2	107.9	103.4	105.2	108.8	107.2	103.7	106.2
1955	110.1	120.4	127.8	136.8	107.5	123.8	127.8	136.2	123.8
1956	143.3	144.0	148.0	148.8	137.9	147.3	146.6	149.4	145.3
1957	149.0	143.0	137.3	129.0	146.1	146.8	136.7	128.9	139.6
1958	127.7	130.6	126.9	127.7	125.0	134.3	127.2	126.7	128.3
1959	137.5	144.7	150.7	156.6	134.0	149.3	150.6	154.8	147.2
1960	146.8	137.0	131.4	134.9	143.8	141.0	131.3	133.2	137.3
1961	132.6	137.3	144.9	141.4	130.1	141.5	145.7	140.4	139.4
<b>Transportation equipment</b>									
1946	75.3	84.8	80.5	81.7	73.2	87.8	78.3	83.3	80.6
1947	94.9	91.8	97.5	97.4	91.4	95.5	94.9	99.3	95.3
1948	94.4	96.5	94.8	102.7	92.3	100.8	92.5	103.3	97.2
1949	94.6	101.3	103.2	100.3	93.9	106.9	99.9	99.2	100.0
1950	104.9	101.6	113.0	114.7	104.7	109.3	108.5	110.4	108.3
1951	132.8	129.0	132.1	130.2	135.0	139.9	125.6	124.7	131.3
1952	134.0	147.2	154.7	162.9	136.9	160.5	145.4	153.7	149.1
1953	168.4	169.6	164.8	155.0	174.8	187.6	153.9	144.5	165.2
1954	163.3	136.2	130.7	117.5	169.4	156.2	111.4	112.3	137.3
1955	139.3	151.9	162.7	130.9	146.0	179.9	131.3	123.3	145.1
1956	136.5	164.2	157.5	170.1	143.6	193.7	133.0	161.4	157.9
1957	163.3	152.0	147.4	138.1	171.1	175.9	124.3	133.5	151.2
1958	135.2	133.2	121.1	137.8	140.9	153.4	104.0	131.8	132.5
1959	138.4	136.4	133.1	116.6	147.8	158.8	104.9	114.4	131.5
1960	136.4	130.3	125.0	127.6	149.0	152.8	93.2	124.9	130.0
1961	120.3	121.4	136.6	143.3	131.1	141.9	101.3	144.7	129.8
<b>Non-ferrous metal products</b>									
1946	78.2	81.9	83.3	83.4	76.4	84.6	82.2	83.8	81.8
1947	86.6	89.2	89.0	93.6	84.7	92.1	87.8	94.1	89.6
1948	95.7	98.1	101.1	101.8	93.8	100.9	99.7	102.3	99.2
1949	98.8	99.7	101.0	99.9	97.2	102.8	99.4	100.8	100.0
1950	100.2	101.8	102.8	111.1	99.0	104.2	101.0	111.9	104.0
1951	114.7	115.8	116.1	110.1	113.7	117.9	113.9	111.0	114.1
1952	111.8	114.1	108.9	113.7	111.1	115.7	106.6	114.9	112.2
1953	123.0	120.2	120.2	117.2	122.4	121.3	118.0	118.8	120.1
1954	112.1	116.2	117.4	122.2	111.4	116.6	115.8	124.3	117.0
1955	125.5	128.7	127.2	128.6	124.4	128.3	126.6	130.9	127.5
1956	123.6	132.2	138.0	137.7	122.3	130.8	138.3	140.4	133.0
1957	136.2	126.7	117.8	128.9	134.8	125.4	119.0	131.3	127.8
1958	135.7	136.4	124.8	109.2	133.7	134.8	127.0	111.4	126.7
1959	128.7	136.0	132.1	138.2	126.8	136.5	134.4	141.0	134.7
1960	148.1	148.5	149.9	148.2	145.4	148.2	149.3	150.3	148.3
1961	148.0	147.7	142.5	152.8	146.1	147.9	141.6	154.7	147.6

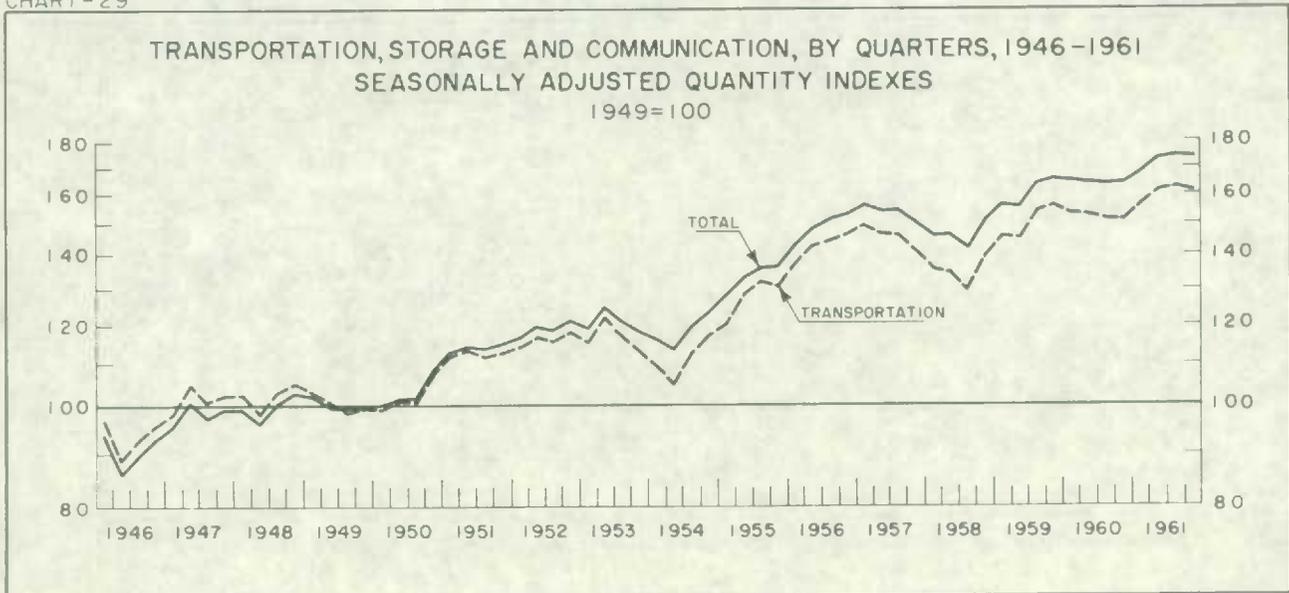
TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
Electrical apparatus and supplies									
1946	63.7	66.1	68.1	73.0	65.9	67.2	64.2	73.4	67.7
1947	85.1	88.8	90.6	94.8	87.6	90.7	86.1	94.0	89.6
1948	94.3	91.3	87.2	93.1	97.0	93.6	83.4	91.9	91.5
1949	96.0	99.9	103.8	101.4	98.2	102.8	99.1	99.8	100.0
1950	106.1	110.1	115.8	117.4	106.6	113.5	111.4	116.6	112.5
1951	122.4	124.5	120.4	115.6	123.6	126.2	117.0	116.3	120.7
1952	111.1	118.6	131.3	137.4	110.5	118.1	126.8	142.6	124.5
1953	146.7	150.3	148.5	157.0	146.0	146.9	143.8	167.0	150.9
1954	151.4	147.5	147.7	155.3	150.6	142.5	143.2	170.6	151.7
1955	159.4	163.0	189.5	188.4	159.5	154.4	180.9	209.8	176.2
1956	184.1	187.7	200.0	194.1	178.8	176.9	199.5	210.2	191.3
1957	191.6	192.0	179.5	175.2	187.6	179.4	179.9	167.5	183.6
1958	173.0	177.1	179.9	175.7	169.3	170.3	178.8	186.4	176.2
1959	178.8	184.8	188.8	189.0	175.6	178.9	188.0	196.7	184.8
1960	190.7	184.8	176.4	170.4	187.4	179.8	176.7	176.8	180.2
1961	169.3	175.0	185.8	199.0	166.9	170.5	186.4	206.7	182.6
Non-metallic mineral products									
1946	69.1	73.1	68.9	76.0	64.4	74.9	70.9	77.7	72.0
1947	83.0	64.4	87.7	89.2	77.4	86.3	90.9	90.5	86.3
1948	90.6	90.8	92.9	94.6	83.5	92.7	97.0	95.9	92.2
1949	94.8	98.8	103.9	102.1	86.5	101.1	109.8	102.7	100.0
1950	101.9	108.0	113.9	118.7	93.1	110.9	120.4	119.4	111.0
1951	123.9	123.7	117.8	114.5	112.4	127.0	124.3	115.6	119.8
1952	117.0	118.9	122.9	130.9	106.5	122.6	130.7	131.1	122.8
1953	138.7	136.9	139.3	142.7	124.6	140.6	148.6	143.0	139.2
1954	140.7	144.9	147.5	149.3	125.7	148.5	160.2	149.8	146.1
1955	155.5	165.9	178.8	180.2	135.7	170.6	196.4	181.6	171.1
1956	190.4	193.7	189.7	191.5	162.2	196.6	210.8	194.5	191.5
1957	184.1	186.8	197.1	192.6	156.0	192.9	221.7	194.4	191.3
1958	190.5	206.0	207.2	214.5	155.7	214.0	236.1	217.9	205.9
1959	221.0	224.3	225.8	220.4	178.2	230.8	259.9	224.2	223.2
1960	217.4	205.3	207.9	214.7	175.3	213.0	238.7	216.6	210.9
1961	210.2	221.0	220.2	228.5	166.3	227.7	254.8	232.0	220.2
Construction									
1948	64.2	87.3	69.5	71.9	45.1	70.6	80.6	77.3	68.4
1947	74.0	78.7	80.3	84.3	53.3	82.1	93.2	90.3	79.7
1948	81.2	86.8	91.7	94.1	60.9	89.2	106.2	100.5	89.2
1949	99.9	98.7	99.8	101.8	75.0	101.4	115.4	108.2	100.0
1950	104.4	105.9	108.4	107.8	78.2	108.5	125.9	114.2	106.7
1951	114.6	112.0	107.9	109.4	65.2	114.3	126.4	116.5	110.6
1952	111.2	123.1	124.3	127.6	81.0	126.0	149.8	136.0	123.2
1953	125.6	127.6	132.6	132.1	89.9	130.3	159.4	140.8	130.1
1954	129.7	126.5	129.7	132.9	90.7	129.1	157.9	141.5	129.8
1955	135.1	137.3	142.0	144.0	92.7	140.2	173.3	153.1	139.8
1956	154.9	166.0	168.3	169.5	105.7	170.8	207.0	179.3	165.7
1957	171.5	174.8	175.1	174.8	116.4	180.2	216.8	185.5	174.7
1958	173.8	182.0	179.3	174.5	114.8	189.0	223.3	186.5	178.4
1959	169.7	173.0	168.3	170.4	109.2	179.3	211.4	182.9	170.7
1960	168.0	160.0	161.8	161.7	106.2	165.3	206.6	173.9	163.0
1961	158.5	165.5	173.2	171.7	98.3	169.1	221.0	185.3	168.4

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946 - 61 - Continued**  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Electric power and gas utilities</b>									
1946 .....	78.4	78.1	78.0	83.4	80.8	78.6	74.6	83.6	79.4
1947 .....	81.7	88.0	97.6	92.2	84.9	88.6	93.7	92.2	89.8
1948 .....	93.1	94.7	95.3	96.1	97.1	95.2	90.5	96.3	94.8
1949 .....	97.6	99.9	100.1	102.4	102.6	100.3	94.2	102.9	100.0
1950 .....	107.1	110.2	115.1	120.7	113.3	110.2	107.2	122.1	113.2
1951 .....	124.0	128.3	130.5	135.2	131.8	127.8	120.6	137.5	129.4
1952 .....	138.3	138.2	142.2	144.3	147.5	137.0	130.9	147.5	140.7
1953 .....	145.0	147.5	148.5	150.6	155.0	145.5	136.1	154.8	147.9
1954 .....	153.3	156.9	163.7	170.2	164.4	156.0	149.6	175.7	161.4
1955 .....	177.6	179.3	184.5	191.5	189.8	175.4	169.0	198.8	183.3
1956 .....	194.4	203.1	209.3	212.9	208.2	198.0	191.7	221.5	204.9
1957 .....	217.1	217.1	219.9	226.8	232.7	211.2	201.0	236.4	220.3
1958 .....	236.7	235.2	235.9	247.1	254.7	228.1	215.0	258.4	239.1
1959 .....	257.2	265.6	270.7	282.8	282.9	256.6	240.7	294.5	268.7
1960 .....	292.0	296.5	307.0	302.0	322.7	287.3	268.9	313.0	298.0
1961 .....	304.1	319.4	327.8	325.9	340.8	308.6	284.7	336.8	317.7
<b>Transportation, storage and communication</b>									
1946 .....	93.5	86.0	89.8	92.6	83.4	84.1	95.4	98.9	90.5
1947 .....	95.3	100.5	97.3	99.3	84.9	99.4	102.9	105.8	98.2
1948 .....	99.2	96.0	100.2	102.4	88.2	95.4	106.6	109.0	99.8
1949 .....	101.7	99.7	99.4	99.9	90.1	99.1	105.1	105.7	100.0
1950 .....	100.0	101.5	101.6	108.6	87.8	102.5	108.1	114.8	103.3
1951 .....	112.2	113.9	113.3	114.4	96.1	115.5	119.9	120.7	113.1
1952 .....	116.3	119.7	118.6	120.9	102.8	122.4	125.6	126.7	119.4
1953 .....	118.9	124.5	120.5	117.9	104.7	128.0	128.4	122.8	120.9
1954 .....	115.8	113.2	119.5	123.0	101.1	116.1	127.4	127.1	117.9
1955 .....	128.0	133.2	135.7	136.1	112.7	137.3	145.2	139.4	133.6
1956 .....	142.6	148.6	151.0	152.3	126.8	152.7	163.6	153.7	149.2
1957 .....	155.9	153.8	153.9	149.9	133.1	154.6	161.7	148.9	149.5
1958 .....	146.1	146.4	142.1	150.7	129.1	150.1	154.6	152.9	146.6
1959 .....	156.0	155.4	163.9	165.5	139.8	159.1	175.4	167.8	160.6
1960 .....	164.4	164.1	163.7	164.1	147.2	167.9	174.4	166.0	183.9
1961 .....	168.2	173.0	174.1	173.8	150.7	176.7	185.1	175.7	172.1

CHART - 29



**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued**  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Transportation									
1946 .....	96.8	88.3	92.5	95.3	84.7	86.9	100.0	101.2	93.2
1947 .....	98.3	104.4	100.6	102.3	85.4	104.2	108.0	108.5	101.5
1948 .....	102.3	98.2	102.9	104.8	88.6	98.5	111.2	111.2	102.4
1949 .....	102.8	100.4	98.3	99.6	88.7	100.6	105.9	104.9	100.0
1950 .....	99.1	100.4	100.3	107.4	84.0	102.6	108.6	113.1	102.1
1951 .....	111.4	112.9	111.3	112.2	91.8	115.8	120.4	117.6	111.4
1952 .....	113.9	116.5	115.6	117.9	98.2	120.7	125.2	122.3	116.6
1953 .....	115.0	121.9	116.5	112.5	98.4	126.9	127.2	116.0	117.1
1954 .....	109.1	104.5	111.8	116.8	92.0	108.5	122.6	119.4	110.6
1955 .....	120.0	128.1	131.4	130.3	101.9	133.4	144.3	132.2	127.9
1956 .....	137.1	142.3	144.6	146.4	118.2	147.6	161.4	145.8	143.3
1957 .....	149.6	146.7	146.5	140.7	121.8	147.8	157.2	137.3	141.0
1958 .....	135.3	134.7	129.7	139.6	114.7	139.5	146.3	140.4	135.2
1959 .....	145.8	145.4	154.0	156.2	126.3	150.4	169.4	157.0	150.8
1960 .....	153.3	152.9	151.3	151.1	132.1	158.0	165.8	151.3	151.8
1961 .....	156.0	161.0	162.4	160.6	134.7	166.1	177.3	160.7	159.7
Air transport and airports									
1946 .....	42.8	46.0	50.5	46.2	34.4	47.6	63.4	42.2	46.9
1947 .....	52.2	57.6	60.7	64.3	42.3	59.7	75.5	58.5	59.0
1948 .....	64.3	84.3	92.8	97.8	53.0	89.0	113.8	89.0	86.2
1949 .....	100.0	98.6	98.4	104.0	83.7	102.8	118.6	94.9	100.0
1950 .....	108.2	112.9	120.0	130.3	92.4	118.1	142.5	118.9	118.0
1951 .....	149.6	146.1	147.3	163.9	129.4	153.3	173.3	148.9	151.2
1952 .....	179.9	190.2	195.2	204.7	156.6	200.1	228.8	185.3	192.7
1953 .....	212.9	221.9	231.3	244.9	185.4	235.5	271.2	219.5	227.9
1954 .....	241.8	241.4	259.2	272.1	210.0	257.3	304.4	242.8	253.6
1955 .....	287.2	373.0	371.0	359.2	249.5	398.8	437.1	319.9	351.3
1956 .....	399.9	414.5	435.7	436.2	347.9	439.8	513.8	387.6	422.3
1957 .....	453.3	454.5	446.8	467.8	393.8	480.1	528.4	416.5	454.7
1958 .....	472.3	483.3	503.1	546.5	409.0	509.4	597.2	490.8	501.6
1959 .....	543.0	534.6	550.7	567.7	468.0	560.0	657.2	509.7	548.7
1960 .....	562.2	595.3	622.2	623.8	481.6	621.9	740.8	560.5	601.2
1961 .....	656.8	672.4	693.3	684.3	560.9	702.3	827.9	615.9	676.7

CHART-30

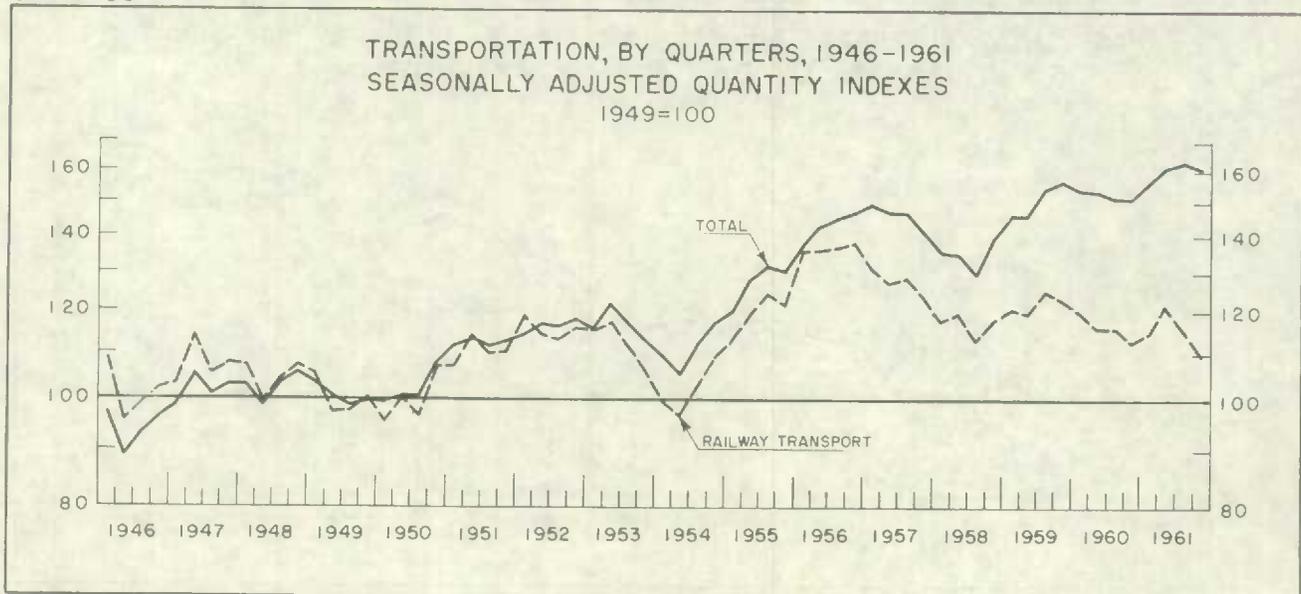


TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued

1949 = 100

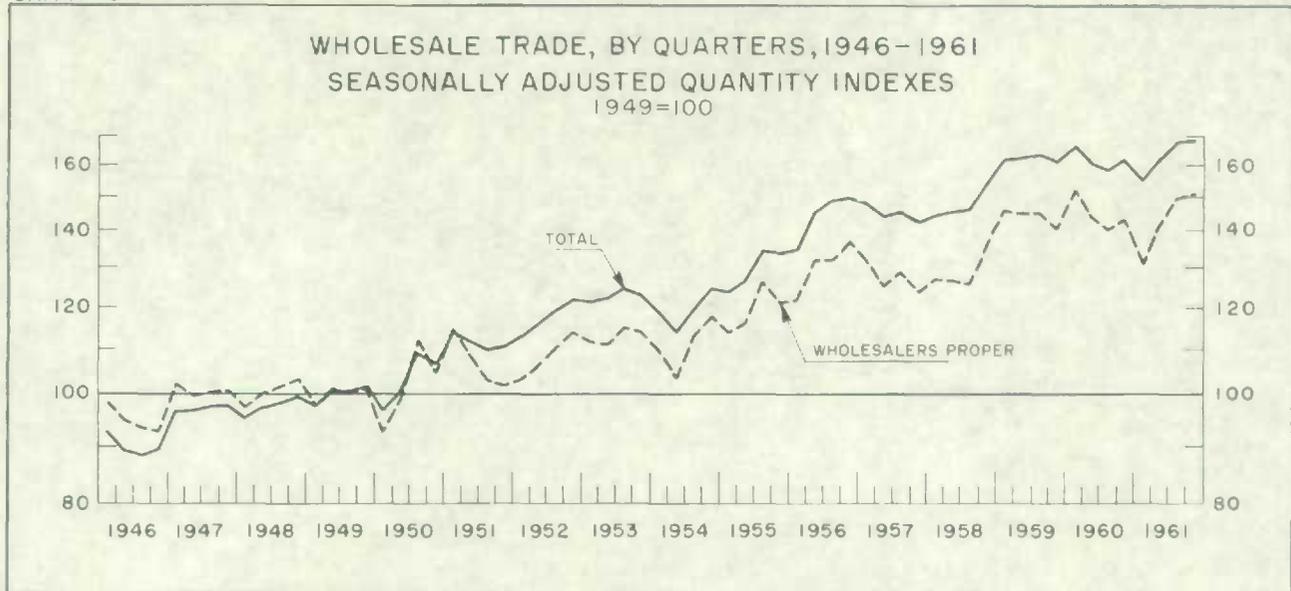
	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Railway transport (including express)									
1946 .....	108.5	94.9	98.9	101.7	103.2	91.2	102.1	107.9	101.1
1947 .....	102.4	113.4	104.5	107.2	98.2	108.6	106.7	114.2	106.9
1948 .....	106.7	99.7	103.7	106.8	102.1	95.7	106.0	114.2	104.5
1949 .....	104.6	96.8	97.1	100.2	100.2	93.1	99.8	106.9	100.0
1950 .....	94.7	100.1	95.8	106.3	90.4	97.2	98.4	112.7	99.7
1951 .....	106.4	113.8	109.9	110.2	101.1	111.2	112.0	115.8	110.0
1952 .....	118.9	113.7	112.6	115.3	112.4	112.2	115.5	120.0	115.0
1953 .....	114.9	116.4	111.4	105.8	108.0	115.3	115.3	109.0	111.9
1954 .....	99.3	96.1	102.6	109.3	92.6	95.1	107.6	111.9	101.8
1955 .....	113.1	119.1	124.0	121.2	104.9	118.2	131.2	123.6	119.5
1956 .....	135.7	135.9	136.4	137.9	125.4	135.0	148.2	136.3	136.2
1957 .....	130.9	126.9	128.2	123.0	120.4	126.9	137.8	124.6	127.4
1958 .....	117.1	119.8	112.4	117.2	106.4	120.4	121.6	118.5	116.7
1959 .....	120.4	119.7	124.9	122.8	108.9	120.7	135.4	123.8	122.2
1960 .....	119.9	115.3	115.1	112.1	107.9	116.1	125.2	112.8	115.5
1961 .....	114.3	121.5	114.5	109.3	102.8	122.3	124.8	110.5	115.1
Passenger transport (urban, suburban and interurban)									
1946 .....	95.6	96.5	95.2	95.7	92.8	94.2	99.0	96.7	95.7
1947 .....	95.6	96.0	96.6	94.7	93.2	93.8	101.4	95.0	95.8
1948 .....	94.2	94.1	97.5	98.9	91.3	92.1	103.1	98.9	96.3
1949 .....	99.8	101.6	100.4	97.9	96.8	99.1	106.6	97.6	100.0
1950 .....	96.7	96.4	96.0	96.1	93.6	94.2	102.4	95.5	96.4
1951 .....	98.0	96.6	96.7	96.0	94.8	94.7	102.3	95.4	96.8
1952 .....	92.7	94.3	92.1	92.3	89.9	92.7	97.1	91.4	92.8
1953 .....	92.2	91.4	89.5	89.3	89.3	90.1	94.4	88.4	90.5
1954 .....	87.2	86.0	85.2	83.5	84.7	85.0	89.1	82.7	85.4
1955 .....	82.9	82.7	82.9	79.9	80.4	81.9	87.0	79.2	82.1
1956 .....	77.2	75.7	75.1	76.7	74.6	74.9	79.3	75.8	76.2
1957 .....	76.9	74.1	73.1	72.2	74.4	73.3	77.1	71.4	74.0
1958 .....	71.1	72.1	71.4	70.6	68.8	71.3	75.7	69.7	71.4
1959 .....	71.2	71.0	71.2	70.8	68.5	70.3	75.6	69.9	71.0
1960 .....	70.6	70.8	70.1	70.3	67.9	70.0	75.3	69.2	70.6
1961 .....	70.3	69.3	68.5	69.8	67.3	68.6	73.9	68.6	69.6
Storage									
1946 .....	96.2	77.5	86.1	91.8	70.8	67.8	90.3	122.5	87.8
1947 .....	89.5	102.0	84.7	93.6	67.0	88.7	88.7	126.3	92.7
1948 .....	85.5	67.8	88.8	94.6	65.0	60.3	99.6	124.9	87.4
1949 .....	97.9	91.7	105.1	99.9	73.6	81.1	115.7	129.6	100.0
1950 .....	92.0	92.8	92.2	121.3	69.9	85.8	101.3	151.8	102.2
1951 .....	121.2	132.2	125.7	142.7	92.7	125.8	133.0	174.4	131.5
1952 .....	162.3	192.0	177.2	171.3	124.1	189.8	186.7	203.2	175.9
1953 .....	183.1	181.8	180.8	177.6	142.3	183.7	190.6	203.2	179.9
1954 .....	185.7	172.6	193.4	192.0	146.9	179.3	203.4	213.2	185.7
1955 .....	182.6	185.7	178.3	180.9	147.5	196.0	189.8	195.9	182.4
1956 .....	203.5	222.0	228.1	218.4	166.0	234.9	240.2	232.4	218.4
1957 .....	227.6	213.3	211.7	220.0	187.3	227.1	223.1	231.8	217.3
1958 .....	217.0	229.1	204.8	217.6	179.2	246.1	217.8	227.8	217.8
1959 .....	225.5	208.8	226.2	215.3	185.8	223.3	240.9	224.6	218.6
1960 .....	208.6	206.6	218.2	214.2	171.0	223.0	231.1	223.4	212.1
1961 .....	222.0	233.8	215.5	207.9	179.8	254.1	229.8	217.7	220.3

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued**  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
Communication									
1946 .....	79.5	77.9	79.2	81.3	80.3	75.3	77.6	86.3	79.9
1947 .....	84.2	84.3	85.9	87.9	85.1	81.5	84.1	91.8	85.6
1948 .....	88.7	90.8	90.8	93.7	89.8	87.9	88.7	97.8	91.1
1949 .....	97.9	98.2	103.2	101.5	98.2	95.5	100.4	105.8	100.0
1950 .....	104.8	107.4	109.7	111.9	105.5	104.6	107.0	116.8	108.5
1951 .....	113.9	115.4	119.7	119.3	114.4	112.7	116.2	125.8	117.3
1952 .....	119.2	122.5	122.3	126.3	118.7	119.7	118.6	133.5	122.6
1953 .....	125.8	126.8	128.3	131.3	125.0	124.5	124.4	138.7	128.1
1954 .....	133.1	140.2	140.2	138.6	131.7	138.3	136.2	146.3	138.1
1955 .....	152.5	146.5	147.0	153.1	151.8	144.7	142.4	160.5	149.8
1956 .....	156.3	163.7	166.1	167.1	155.9	161.7	161.1	174.4	163.3
1957 .....	171.3	174.1	175.6	177.2	171.1	171.8	171.0	184.3	174.6
1958 .....	179.7	182.2	183.9	186.0	180.3	179.5	179.3	193.0	183.0
1959 .....	187.4	188.4	195.5	196.2	188.4	185.2	190.7	203.3	191.9
1960 .....	203.2	203.7	206.4	210.1	205.4	200.2	201.3	217.3	206.0
1961 .....	209.8	212.8	216.1	222.9	211.6	208.9	210.5	230.7	215.4
Trade									
1946 .....	88.3	88.1	90.1	90.4	78.1	89.4	90.8	99.2	89.4
1947 .....	97.6	96.7	97.8	97.0	85.6	98.6	99.0	105.7	97.3
1948 .....	94.8	94.7	95.8	98.4	82.7	97.0	97.3	107.1	96.0
1949 .....	96.9	101.4	100.3	101.1	83.9	104.3	102.2	109.7	100.0
1950 .....	101.9	106.3	111.3	108.9	88.1	108.6	113.5	117.5	106.9
1951 .....	113.2	108.4	105.9	106.0	97.9	112.5	108.3	113.9	108.1
1952 .....	107.2	113.5	116.4	119.9	94.1	118.1	117.4	128.9	114.6
1953 .....	120.5	120.9	121.8	122.1	105.4	126.1	122.7	131.1	121.3
1954 .....	119.3	118.2	120.9	123.3	104.5	123.3	121.2	133.6	120.6
1955 .....	125.7	130.8	134.5	135.7	110.3	138.8	133.7	145.2	132.0
1956 .....	137.4	143.9	147.1	147.0	121.6	152.6	145.9	156.6	144.2
1957 .....	145.5	143.9	145.4	143.2	130.0	151.2	143.4	153.8	144.6
1958 .....	145.8	145.3	145.5	151.9	130.5	151.7	143.6	163.7	147.4
1959 .....	156.5	156.0	156.7	155.4	141.2	162.8	153.5	167.9	156.4
1960 .....	157.2	156.3	155.1	157.2	142.0	163.0	151.7	169.8	156.6
1961 .....	154.9	156.8	160.1	161.1	139.2	162.9	156.4	174.4	158.2
Wholesale trade									
1946 .....	92.3	89.2	88.3	89.4	89.7	90.2	89.2	89.7	89.7
1947 .....	96.1	96.3	97.1	97.2	92.4	97.7	98.7	98.3	96.8
1948 .....	94.8	96.7	98.0	99.6	89.9	98.4	100.2	101.0	97.4
1949 .....	97.3	100.5	100.5	101.4	91.3	102.6	103.3	102.9	100.0
1950 .....	96.6	100.3	108.8	106.5	90.0	102.6	112.2	107.7	103.2
1951 .....	113.4	111.6	109.9	110.3	105.1	114.6	113.6	111.5	111.2
1952 .....	112.5	115.6	119.0	121.3	104.6	119.1	122.9	122.4	117.2
1953 .....	121.0	121.6	124.0	122.2	112.5	126.2	127.4	122.9	122.3
1954 .....	118.5	113.6	119.2	124.3	110.3	119.0	121.7	124.2	118.8
1955 .....	123.3	126.3	134.2	133.6	115.3	138.1	133.2	130.8	129.4
1956 .....	134.5	145.2	149.0	149.8	127.6	159.2	147.6	144.5	144.7
1957 .....	147.9	144.0	145.3	142.4	142.2	155.9	142.7	138.6	144.9
1958 .....	144.2	145.1	146.1	154.7	139.5	156.3	143.1	151.6	147.6
1959 .....	161.6	162.0	162.8	160.8	157.7	173.4	158.0	158.5	161.9
1960 .....	166.3	160.0	158.3	161.4	162.8	171.3	153.2	159.8	161.8
1961 .....	154.8	161.3	167.7	168.5	150.2	171.7	161.8	167.1	162.7

TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Continued  
1949=100

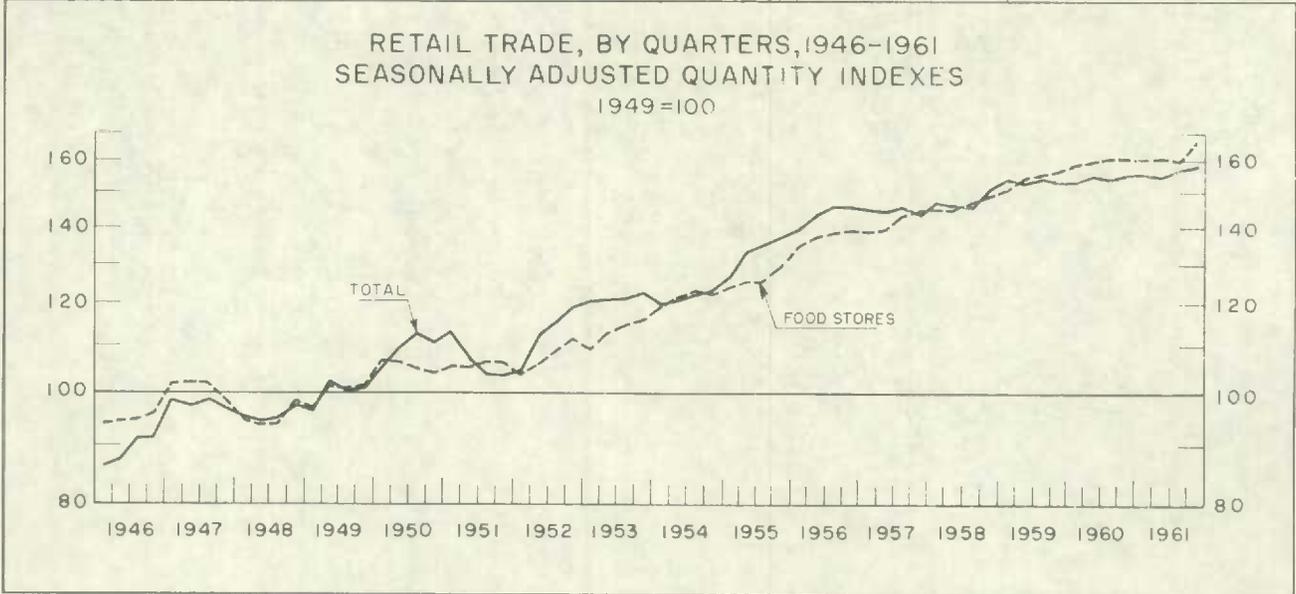
CHART-31



	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Wholesale trade</b>									
<b>Wholesalers proper</b>									
1946 .....	98.2	94.8	92.9	92.5	96.5	95.7	93.8	92.0	94.5
1947 .....	102.0	99.9	100.1	100.6	98.5	101.3	101.8	101.2	100.7
1948 .....	97.0	100.0	101.3	102.8	91.9	101.9	103.9	103.9	100.4
1949 .....	97.3	101.2	100.0	101.1	90.5	103.7	103.6	102.2	100.0
1950 .....	92.5	98.6	111.7	104.8	85.1	101.6	116.2	105.4	102.1
1951 .....	113.8	108.1	102.8	101.5	103.9	111.9	107.6	101.9	106.3
1952 .....	102.9	105.8	110.1	113.4	94.3	110.5	115.0	113.4	108.3
1953 .....	111.4	110.7	114.8	113.5	102.1	117.1	118.8	112.8	112.7
1954 .....	109.9	103.6	112.6	117.6	101.0	111.6	115.0	115.6	110.8
1955 .....	113.0	115.8	126.0	120.8	104.3	134.5	122.4	114.1	118.8
1956 .....	121.3	131.6	131.6	136.6	114.3	152.6	126.4	128.2	130.4
1957 .....	131.7	125.0	128.7	123.3	126.9	142.5	122.1	116.9	127.1
1958 .....	126.9	126.2	125.5	136.3	123.9	142.8	118.5	130.0	128.8
1959 .....	145.3	144.3	144.9	140.1	143.9	162.0	134.8	134.5	143.8
1960 .....	151.9	143.2	140.0	143.0	151.8	160.5	129.5	138.2	145.0
1961 .....	131.0	140.7	149.4	150.6	129.1	156.8	137.3	145.9	142.3
<b>Retail trade</b>									
1946 .....	86.3	87.6	91.0	91.0	72.0	88.9	91.7	104.1	89.2
1947 .....	98.4	97.0	98.2	96.9	82.0	99.1	99.2	109.6	97.5
1948 .....	94.9	93.7	94.6	97.8	78.9	96.3	95.8	110.2	95.3
1949 .....	96.7	101.9	100.2	100.9	80.1	105.1	101.6	113.2	100.0
1950 .....	104.7	109.4	112.6	110.2	87.0	111.8	114.2	122.7	108.9
1951 .....	113.0	106.8	103.9	103.7	94.0	111.4	105.5	115.1	106.5
1952 .....	104.5	112.4	115.1	119.1	88.7	117.5	114.5	132.3	113.3
1953 .....	120.3	120.6	120.7	122.1	101.7	126.1	120.2	135.3	120.8
1954 .....	119.8	120.5	121.7	122.8	101.5	125.6	120.9	138.5	121.6
1955 .....	126.9	133.1	134.6	136.8	107.7	139.2	133.9	152.8	133.4
1956 .....	139.0	143.3	146.2	145.6	118.5	149.1	145.0	162.9	143.9
1957 .....	144.3	143.9	145.5	143.7	123.6	148.7	143.7	161.7	144.4
1958 .....	146.6	145.4	145.2	150.4	125.8	149.3	143.9	170.0	147.3
1959 .....	153.8	152.8	153.6	152.6	132.6	157.2	151.2	172.8	153.5
1960 .....	152.5	154.3	153.5	155.0	131.1	158.7	150.9	175.0	153.9
1961 .....	155.0	154.5	156.2	157.3	133.4	158.3	153.8	178.2	155.9

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued**  
1949 = 100

CHART-32



	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
Grocery and combination (chain)									
1946.....	69.7	70.6	73.5	77.5	69.8	73.0	69.8	76.9	72.4
1947.....	82.3	82.9	83.8	82.0	82.7	86.1	79.5	81.9	82.5
1948.....	85.8	86.8	89.0	95.1	86.6	90.2	84.6	95.5	89.2
1949.....	93.1	98.2	102.3	105.9	93.4	102.4	97.2	107.0	100.0
1950.....	111.6	113.2	114.8	118.3	111.4	117.2	109.1	120.1	114.5
1951.....	117.9	120.3	122.8	126.0	117.2	123.8	117.0	128.7	121.7
1952.....	130.4	135.7	142.3	148.0	129.3	139.4	135.9	151.9	139.1
1953.....	151.4	156.4	162.6	168.5	149.8	160.4	155.8	173.4	159.8
1954.....	171.4	175.2	181.2	184.2	169.1	179.7	173.8	189.6	178.1
1955.....	189.1	194.4	197.7	208.1	186.6	199.2	190.0	213.8	197.4
1956.....	212.6	223.5	226.8	230.1	209.8	228.8	218.4	236.4	223.4
1957.....	234.6	240.2	247.3	251.0	231.9	245.4	238.8	257.5	243.3
1958.....	259.1	257.5	263.2	268.3	256.4	262.6	254.4	274.8	262.0
1959.....	276.1	281.6	288.0	294.5	273.2	286.7	278.9	301.8	285.1
1960.....	299.3	301.8	307.3	307.6	295.8	307.1	297.8	315.4	304.0
1961.....	304.3	318.0	305.0	319.4	300.3	323.6	295.7	326.5	311.5
Grocery and combination (independent)									
1946.....	95.2	96.0	94.6	94.9	89.0	95.0	98.3	100.2	95.6
1947.....	100.2	100.3	99.8	96.5	93.7	100.1	103.0	100.5	99.3
1948.....	92.9	91.3	92.7	97.4	86.9	92.1	95.2	100.3	93.6
1949.....	98.1	101.6	100.0	100.2	92.0	103.4	102.6	102.1	100.0
1950.....	105.2	105.9	104.8	103.9	98.9	108.0	107.4	105.4	104.9
1951.....	106.5	106.6	108.9	108.9	100.1	108.6	111.6	110.6	107.7
1952.....	107.2	109.0	111.9	114.0	100.4	111.1	114.6	116.3	110.6
1953.....	113.4	116.8	118.3	119.4	106.3	119.2	120.7	122.1	117.1
1954.....	120.1	121.9	123.1	121.9	113.0	124.4	125.0	124.7	121.8
1955.....	124.4	124.4	124.4	128.3	117.9	126.6	125.5	131.5	125.4
1956.....	129.9	130.3	131.3	132.6	123.7	131.9	132.2	136.4	131.0
1957.....	132.8	134.0	136.1	137.4	126.8	135.3	136.9	141.5	135.1
1958.....	139.1	138.8	140.6	142.3	133.1	140.1	141.3	146.5	140.2
1959.....	142.7	145.6	145.8	146.0	136.9	147.3	146.3	150.4	145.2
1960.....	147.5	147.9	149.2	148.1	141.2	149.7	149.3	152.4	148.2
1961.....	152.3	149.6	149.7	154.8	145.5	151.5	149.8	158.7	151.4

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Concluded**

1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Finance, insurance and real estate</b>									
1946 .....	79.7	81.0	82.4	83.4	80.0	81.3	82.5	82.7	81.6
1947 .....	85.7	86.9	88.3	89.8	85.9	87.2	88.3	89.3	87.7
1948 .....	91.1	92.3	94.3	96.2	91.3	92.4	94.3	95.7	93.4
1949 .....	97.2	100.3	100.6	101.9	97.3	100.4	100.7	101.5	100.0
1950 .....	103.5	105.0	106.1	107.8	103.6	105.1	106.3	107.5	105.6
1951 .....	110.3	112.5	114.7	116.0	110.4	112.4	115.1	115.7	113.4
1952 .....	116.6	117.7	118.8	120.4	116.7	117.6	119.3	120.1	118.4
1953 .....	121.7	122.0	123.8	125.3	121.6	121.8	124.3	125.0	123.2
1954 .....	126.8	129.2	130.7	132.6	126.5	129.1	131.4	132.4	129.9
1955 .....	135.4	136.2	136.8	137.8	134.8	136.4	137.5	137.5	136.5
1956 .....	139.9	140.2	141.3	144.7	138.8	140.5	142.5	144.3	141.5
1957 .....	147.1	151.1	153.0	152.5	145.4	151.6	154.8	152.0	150.9
1958 .....	153.1	154.9	157.3	159.3	150.9	155.5	159.7	158.5	156.1
1959 .....	161.2	162.8	164.2	165.8	158.6	163.6	167.0	164.8	163.5
1960 .....	167.2	169.0	170.4	171.3	164.4	169.9	173.5	170.2	169.5
1961 .....	173.1	174.5	176.3	178.0	170.2	175.5	179.5	176.9	175.5
<b>Public administration and defence</b>									
1946 .....	177.9	123.8	100.8	94.8	175.4	124.3	105.0	93.9	124.7
1947 .....	93.5	92.8	92.4	91.4	88.5	94.2	96.9	90.6	92.6
1948 .....	91.3	92.4	91.9	93.4	86.0	93.9	96.6	92.6	92.3
1949 .....	93.2	99.7	102.9	103.3	88.3	101.2	108.1	102.5	100.0
1950 .....	104.0	103.9	107.6	111.3	98.6	104.9	112.7	110.4	106.6
1951 .....	114.2	116.5	120.1	126.0	108.8	117.0	125.2	124.9	119.0
1952 .....	134.5	135.2	137.7	138.7	129.0	135.4	143.2	137.4	136.3
1953 .....	141.3	144.3	144.8	147.1	136.0	144.5	150.4	145.7	144.2
1954 .....	148.6	149.5	152.5	155.1	143.6	149.5	158.4	153.8	151.3
1955 .....	155.1	155.6	157.5	157.0	150.3	155.6	163.9	155.5	156.3
1956 .....	158.4	158.2	159.0	159.9	153.6	158.2	165.2	158.3	158.9
1957 .....	159.0	162.2	167.1	166.0	154.5	162.5	173.6	164.3	163.7
1958 .....	167.9	171.1	171.8	174.1	163.1	171.5	178.1	172.4	171.3
1959 .....	176.5	175.3	174.6	173.8	171.4	175.7	180.7	172.3	175.0
1960 .....	174.4	177.1	178.3	181.1	169.5	177.4	184.3	179.9	177.8
1961 .....	182.5	182.6	184.7	185.9	177.3	182.5	190.8	185.0	183.9
<b>Community, recreation, business and personal service</b>									
1946 .....	88.3	89.4	89.1	90.4	86.7	89.5	91.1	90.0	89.3
1947 .....	92.0	92.1	93.5	94.1	90.1	92.2	95.8	93.7	92.9
1948 .....	95.0	95.5	96.0	96.8	92.8	95.6	98.4	96.6	95.9
1949 .....	98.3	99.7	100.5	101.4	95.7	99.8	103.2	101.3	100.0
1950 .....	101.4	102.4	103.7	105.4	98.5	102.7	106.6	105.3	103.3
1951 .....	106.3	107.7	108.9	108.4	103.2	108.1	112.0	108.3	107.9
1952 .....	110.8	111.5	112.1	113.8	107.4	112.0	115.0	113.9	112.1
1953 .....	115.3	115.4	116.0	116.3	111.6	116.1	118.8	116.5	115.7
1954 .....	115.6	117.4	117.5	118.9	112.0	118.2	120.1	119.1	117.3
1955 .....	118.5	119.5	120.2	121.3	114.8	120.4	122.9	121.3	119.9
1956 .....	123.6	125.9	128.4	130.0	119.9	126.9	131.4	129.8	127.0
1957 .....	130.2	130.1	130.9	131.2	126.7	130.9	134.0	130.9	130.6
1958 .....	134.0	134.4	135.0	137.1	130.5	135.1	138.1	136.8	135.2
1959 .....	138.7	140.7	142.3	143.7	135.0	141.4	145.6	143.4	141.4
1960 .....	145.8	146.9	147.9	148.8	141.8	147.5	151.4	148.7	147.4
1961 .....	149.0	150.8	153.8	154.9	145.0	151.4	157.4	154.9	152.2

**TABLE 4. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61**  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
Gross Domestic Product less agriculture									
1946	89.2	86.8	86.0	87.6	84.0	86.7	88.1	90.8	87.4
1947	90.8	92.2	93.5	94.1	85.0	92.5	95.6	97.6	92.7
1948	94.5	94.9	96.3	98.2	88.3	95.3	99.0	101.6	96.0
1949	98.0	99.8	100.5	101.4	91.4	100.7	103.5	104.5	100.0
1950	101.9	104.7	108.3	110.4	94.9	105.8	111.4	113.8	108.4
1951	114.0	115.0	113.8	113.3	105.6	115.7	117.1	116.8	113.8
1952	116.0	118.5	120.2	123.4	107.9	119.8	123.7	126.8	119.6
1953	124.5	125.7	125.8	125.3	116.1	127.4	129.8	128.7	125.5
1954	124.6	124.0	126.7	128.7	115.9	125.8	130.7	132.5	126.2
1955	131.9	135.4	138.8	140.3	122.6	137.7	143.0	143.9	136.8
1956	143.9	147.9	150.0	151.5	133.2	150.3	155.4	154.9	148.4
1957	152.0	151.9	151.2	148.4	140.4	153.8	156.6	151.5	150.5
1958	149.4	151.4	150.8	154.2	138.4	153.8	157.0	157.7	151.7
1959	157.7	159.9	180.5	162.4	146.6	162.4	165.8	166.0	160.2
1960	163.4	161.5	161.5	162.2	152.1	163.9	166.5	165.9	162.1
1961	162.2	165.3	169.2	170.8	150.8	167.6	174.3	174.7	166.8
Goods-producing industries less agriculture									
1946	81.1	83.0	82.3	85.0	76.4	82.6	84.4	87.8	82.8
1947	88.1	90.1	92.5	93.4	83.1	90.1	94.4	96.7	91.0
1948	94.4	95.4	96.7	98.4	88.8	95.4	99.3	101.7	96.3
1949	98.2	99.3	100.5	101.4	92.2	100.1	103.8	104.0	100.0
1950	101.8	105.2	110.2	113.1	95.5	106.0	113.5	116.0	107.7
1951	117.3	119.5	116.8	114.8	109.4	119.3	120.4	118.3	116.9
1952	118.0	119.9	122.1	126.5	109.6	120.6	126.6	129.5	121.5
1953	127.9	128.7	128.9	127.6	119.9	129.8	134.0	131.0	128.7
1954	127.3	125.9	128.5	130.2	118.2	127.0	134.1	134.1	128.4
1955	134.7	138.8	143.7	146.0	125.0	139.9	149.5	149.9	141.1
1956	150.5	154.8	157.0	158.6	138.1	156.0	164.4	162.4	155.2
1957	158.9	158.6	155.4	151.2	146.1	159.5	163.9	154.7	156.0
1958	152.1	155.7	154.5	156.6	139.3	157.4	163.8	159.9	155.1
1959	160.1	164.4	163.1	166.7	147.3	166.2	171.2	170.0	163.7
1960	167.7	162.9	162.7	162.7	154.4	164.6	170.3	166.3	163.9
1961	162.1	166.3	171.8	174.2	149.2	167.8	179.4	177.8	168.6
Commercial industries									
1946	87.7	88.6	88.7	87.9	75.5	85.4	105.0	86.4	88.1
1947	91.8	93.8	94.2	95.3	81.2	92.1	106.9	95.7	94.0
1948	95.0	95.4	97.4	99.1	83.2	93.3	115.2	98.1	97.4
1949	98.0	100.0	100.1	101.5	86.3	98.3	114.9	100.5	100.0
1950	103.2	104.3	107.5	110.3	89.6	101.6	126.4	108.5	106.5
1951	114.5	116.3	114.3	113.6	98.7	111.8	136.9	111.1	114.6
1952	118.9	122.5	123.1	126.1	100.9	116.0	150.8	122.2	122.4
1953	125.8	126.6	127.3	125.5	107.8	121.9	152.6	122.5	128.2
1954	121.6	119.9	122.5	124.9	107.2	119.3	137.9	125.7	122.5
1955	130.8	134.0	137.0	139.0	113.8	131.8	160.2	136.9	135.7
1956	143.7	147.7	148.5	150.7	123.9	144.0	175.7	147.6	147.8
1957	148.9	148.2	147.5	144.2	130.5	146.9	165.9	142.9	146.5
1958	145.9	147.7	146.6	150.5	128.1	146.7	167.8	149.1	148.0
1959	153.7	155.8	155.8	157.1	135.9	154.3	177.0	155.4	155.7
1960	159.2	156.8	156.4	157.0	140.9	154.7	179.1	154.5	157.3
1961	154.8	158.7	162.8	163.5	139.0	158.6	178.2	163.1	159.7

TABLE 4. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61 - Concluded  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Commercial less agriculture									
1946	84.2	84.6	85.1	87.1	78.7	84.5	87.1	90.7	85.3
1947	90.7	92.3	93.7	94.4	84.7	92.6	95.7	98.3	92.8
1948	94.8	95.0	96.6	98.5	88.2	95.5	99.2	102.4	96.3
1949	98.2	99.8	100.3	101.3	91.3	100.8	103.3	104.7	100.0
1950	101.8	104.9	108.6	110.7	94.4	105.8	111.7	114.4	106.6
1951	114.4	115.2	113.6	112.8	105.5	116.0	117.0	116.6	113.8
1952	115.1	117.8	119.5	123.0	106.6	119.3	123.1	126.8	119.0
1953	123.9	125.0	125.1	124.3	115.1	127.0	129.2	128.2	124.9
1954	123.4	122.7	125.3	127.3	114.0	124.5	129.5	131.7	124.9
1955	130.9	134.7	138.3	139.9	120.9	137.2	142.5	144.0	136.1
1956	143.7	148.0	150.4	151.8	132.3	150.7	155.8	155.6	148.6
1957	152.2	152.0	150.8	147.8	139.8	154.1	156.6	151.3	150.4
1958	148.7	150.7	149.9	153.4	136.9	153.3	156.4	157.3	151.0
1959	157.0	159.4	160.0	162.0	145.1	162.1	165.5	166.1	159.7
1960	163.0	160.6	160.5	160.9	150.8	163.3	165.6	165.1	161.2
1961	160.7	164.0	168.0	169.7	148.5	166.4	173.2	174.0	165.5
Non-commercial industries									
1946	137.9	107.6	95.1	92.5	136.4	107.8	97.6	92.0	108.4
1947	91.3	91.2	91.5	91.6	88.4	91.9	94.1	91.1	91.4
1948	92.2	93.2	93.3	94.5	89.1	94.0	96.1	94.0	93.3
1949	95.3	99.6	101.9	102.6	92.5	100.5	105.0	102.1	100.0
1950	102.8	103.0	105.5	108.1	99.7	103.5	108.5	107.5	104.8
1951	110.4	112.4	115.0	118.5	107.3	112.8	118.0	117.9	114.0
1952	123.8	124.5	126.4	127.7	120.7	124.7	129.5	127.0	125.5
1953	129.8	131.9	132.5	134.6	126.7	132.1	135.7	133.9	132.1
1954	136.6	137.7	139.8	141.7	133.6	137.8	143.2	141.0	138.9
1955	141.7	142.3	144.0	144.3	138.7	142.4	147.8	143.5	143.1
1956	145.4	146.0	147.2	148.5	142.5	146.0	150.9	147.6	146.8
1957	149.1	151.1	154.3	154.4	146.3	151.3	158.2	153.5	152.3
1958	156.0	158.5	159.9	162.2	153.1	158.9	163.6	161.2	159.2
1959	164.4	164.9	165.5	166.1	161.4	165.2	169.1	165.2	165.2
1960	167.6	170.1	171.8	174.7	164.6	170.4	175.3	174.0	171.1
1961	176.9	178.5	181.0	182.5	173.7	178.6	184.6	181.9	179.7
Index of Industrial Production									
1946	82.5	83.8	83.3	85.9	81.0	84.6	83.3	86.3	83.8
1947	89.4	90.9	93.1	93.5	88.0	91.9	92.7	93.7	91.5
1948	94.4	96.0	96.7	98.6	92.8	97.2	96.7	98.9	96.4
1949	98.1	99.5	100.8	101.3	96.5	101.0	100.9	101.6	100.0
1950	101.8	104.3	109.1	112.8	100.1	105.8	108.8	112.9	106.9
1951	116.1	118.2	117.0	114.8	113.9	119.9	117.1	115.1	116.6
1952	116.5	118.9	122.1	126.8	114.4	120.6	121.7	126.9	120.9
1953	129.2	129.8	129.0	127.1	127.5	131.9	129.0	127.7	129.1
1954	127.9	126.6	128.3	129.5	125.8	128.7	128.4	130.9	128.5
1955	135.4	139.9	145.5	147.4	132.9	142.2	145.1	148.8	142.3
1956	149.9	154.2	156.5	158.7	146.6	156.3	156.7	160.1	154.9
1957	158.5	157.0	154.5	150.7	155.5	156.4	155.5	152.2	155.4
1958	151.8	154.6	153.4	156.8	148.6	155.9	154.9	158.1	154.4
1959	162.2	166.6	166.4	169.3	159.3	168.4	166.5	170.2	166.1
1960	171.4	166.8	165.7	166.4	168.7	168.8	184.6	167.4	167.4
1961	166.1	170.6	176.0	179.5	163.7	172.6	174.5	180.8	172.9

**TABLE 6. Comparison of Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, with Constant Dollar Expenditure on Gross National Product and on Gross Domestic Product, at Market Prices, by Years, 1935-61**

1949 = 100

	1935	1936	1937	1938	1939	1940	1941
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	49.7	52.4	56.7	56.5	60.2	69.2	80.6
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	47.0	49.1	54.0	54.3	58.3	66.8	76.4
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	49.8	51.8	56.2	56.5	60.7	69.6	78.4
	1942	1943	1944	1945	1946	1947	1948
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	95.0	99.0	103.0	97.0	89.8	93.8	97.1
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	90.7	94.0	97.5	95.2	93.3	94.5	96.3
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	92.3	95.7	99.1	96.9	94.2	94.7	95.8
	1949	1950	1951	1952	1953	1954	1955
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	100.0	106.4	114.6	122.7	126.7	123.9	136.3
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	100.0	106.9	113.5	122.5	127.2	123.5	134.2
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	100.0	107.0	113.0	123.0	127.2	123.0	133.1
	1956	1957	1958	1959	1960	1961	
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	147.7	147.0	148.9	156.5	158.5	161.4	
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	145.7	147.6	149.3	153.9	156.8	159.7	
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	146.0	147.5	149.6	153.7	156.9	159.7	

<sup>1</sup> See Table 1.<sup>2</sup> Obtained by indexing the constant dollar expenditure series published in *National Accounts Income and Expenditure* (annual).<sup>3</sup> Constant dollar expenditure at market prices (line 2) plus interest and dividends paid to non-residents, minus interest and dividends received from non-residents, minus residual error of estimate (balancing item between G.N.E. and G.N.P. current dollar aggregates), all expressed in constant dollars. This series contains constant dollar indirect taxes less subsidies but is otherwise conceptually the same as the industry of origin series shown on line 1.

**TABLE 7. Quantity or Constant Dollar Index Comparison of Gross Domestic Product at Factor Cost, by Industry of Origin, with Expenditure on Gross National Product and on Gross Domestic Product, at Market Prices, 1947-61**

Seasonally adjusted quarterly indexes, 1949 = 100

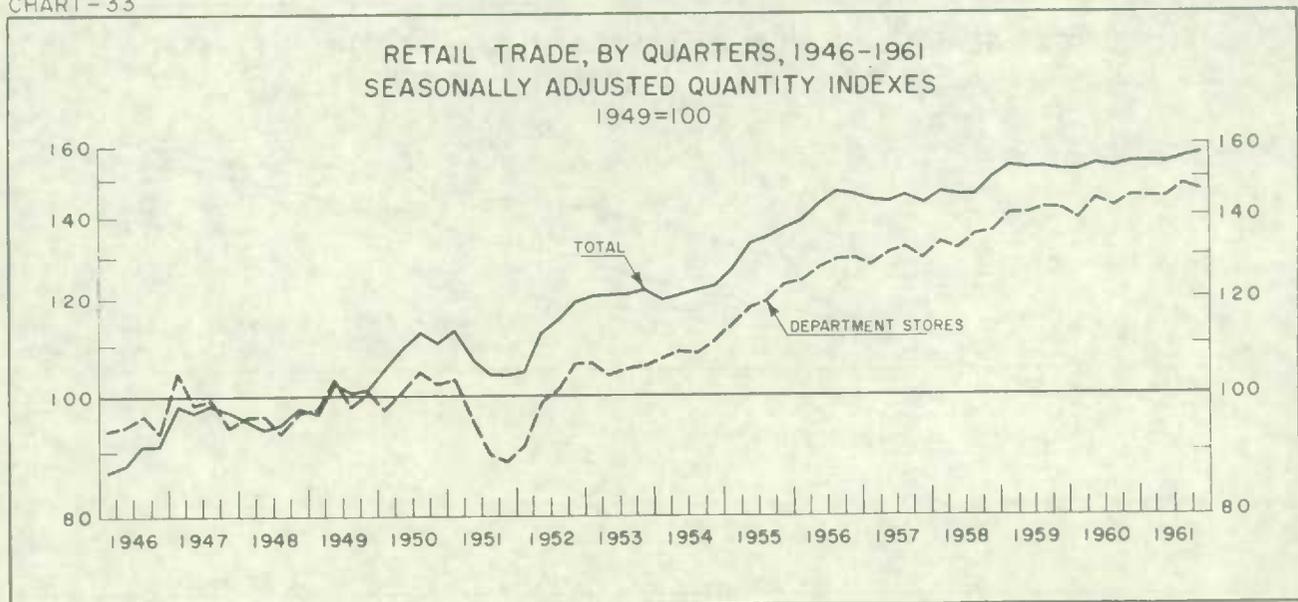
	I	II	III	IV	I	II	III	IV	I	II	III	IV
	1947				1948				1949			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	91.8	93.6	94.0	95.0	94.8	95.2	97.1	98.7	97.7	100.0	100.3	101.6
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	92.0	96.7	94.5	94.9	94.2	96.0	97.0	97.9	97.0	99.4	101.5	102.1
Expenditure on Gross Domestic Product at market prices, excluding residual error of estimate <sup>3</sup> .....	92.0	97.4	94.0	95.5	92.7	95.3	97.3	97.9	96.5	99.6	102.6	101.2
	1950				1951				1952			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	103.2	104.2	107.4	110.1	114.1	115.9	114.4	114.0	119.3	122.6	123.4	126.2
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	104.5	104.5	107.9	110.7	114.2	115.7	113.2	110.9	119.6	121.1	123.6	125.9
Expenditure on Gross Domestic Product at market prices, excluding residual error of estimate <sup>3</sup> .....	105.3	105.3	105.4	112.1	114.0	114.7	112.8	110.3	119.1	122.2	124.7	125.8

See footnotes at end of table.

**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Continued**  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Clothing and shoe stores</b>									
1946 .....	100.0	102.5	101.5	104.9	81.1	109.4	90.3	129.7	102.6
1947 .....	109.9	105.7	107.7	102.1	87.9	113.2	95.9	126.5	105.9
1948 .....	102.4	96.7	98.0	98.5	81.3	104.1	86.9	121.9	98.6
1949 .....	98.9	106.3	98.3	96.7	78.1	115.1	87.4	119.4	100.0
1950 .....	90.7	97.2	99.7	99.8	71.1	105.1	88.3	124.7	97.3
1951 .....	105.7	99.1	97.8	94.1	82.7	106.6	86.7	118.1	98.6
1952 .....	95.7	102.3	103.5	109.1	75.2	109.4	91.5	138.1	103.6
1953 .....	109.6	105.0	105.4	106.1	86.2	111.2	93.4	135.4	106.6
1954 .....	104.2	104.9	104.3	103.6	82.0	110.4	92.6	132.7	104.4
1955 .....	104.0	109.0	107.2	110.1	82.1	113.6	95.9	139.8	107.9
1956 .....	112.8	112.4	118.4	120.8	90.1	116.1	106.4	153.5	116.5
1957 .....	118.4	119.5	120.4	117.2	94.6	122.5	108.5	149.4	118.8
1958 .....	121.5	118.7	120.9	122.6	97.9	121.0	109.4	156.1	121.1
1959 .....	124.0	123.3	123.1	126.3	100.6	125.2	111.9	160.5	124.5
1960 .....	123.0	130.3	128.6	126.5	100.1	132.3	116.6	160.5	127.4
1961 .....	128.1	125.4	128.6	126.2	104.7	127.6	116.0	160.8	127.3
<b>Department stores</b>									
1946 .....	93.6	94.2	96.3	93.0	78.6	90.5	85.2	124.5	94.7
1947 .....	104.2	98.5	99.4	94.0	86.7	95.3	87.2	125.7	98.7
1948 .....	95.5	96.0	92.8	97.0	78.6	93.4	80.7	129.3	95.5
1949 .....	97.5	103.1	98.1	100.4	79.7	101.0	84.9	134.4	100.0
1950 .....	97.3	100.9	104.1	101.9	79.2	98.9	89.4	137.2	101.2
1951 .....	102.8	95.0	89.1	87.9	83.4	93.1	76.5	118.7	92.9
1952 .....	91.0	98.9	101.1	106.0	74.3	96.5	87.5	142.4	100.2
1953 .....	106.2	103.6	104.8	105.4	86.6	100.8	90.7	142.1	105.1
1954 .....	106.9	108.6	108.1	111.0	87.0	105.5	94.0	149.6	109.1
1955 .....	113.9	117.5	119.0	123.4	92.1	113.9	104.7	165.2	119.0
1956 .....	124.3	127.3	129.5	129.7	100.6	123.2	114.8	173.6	128.0
1957 .....	127.9	130.4	131.9	129.6	103.3	125.8	118.0	173.3	130.1
1958 .....	133.1	131.9	135.2	136.1	107.5	126.8	121.8	181.8	134.5
1959 .....	140.2	140.3	142.1	141.6	113.1	134.6	128.6	188.4	141.2
1960 .....	139.7	144.2	142.1	144.8	112.4	138.2	129.3	193.2	143.3
1961 .....	144.7	144.6	148.1	146.3	116.4	138.7	134.7	196.3	146.5

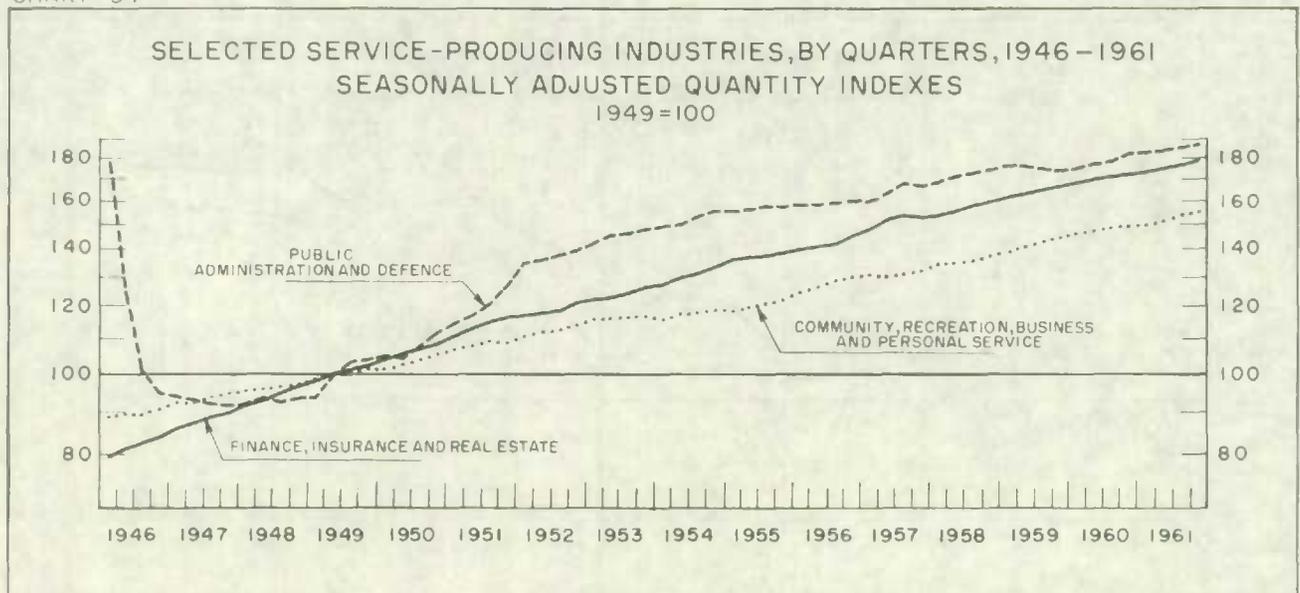
CHART-33



**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946 - 61 - Continued**  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Motor vehicle dealers</b>									
1946	56.8	65.5	67.8	68.7	52.2	73.0	68.9	65.4	64.9
1947	83.5	82.1	90.3	97.9	75.8	92.4	91.9	92.7	88.2
1948	83.6	85.1	83.3	97.1	75.8	96.7	85.5	89.8	87.0
1949	79.3	103.1	108.5	106.1	72.3	119.0	112.4	96.3	100.0
1950	134.6	138.2	160.3	163.4	122.2	162.8	166.0	143.2	148.5
1951	185.3	188.4	158.0	151.7	167.0	202.3	161.5	130.6	185.4
1952	156.0	185.9	179.4	196.9	139.9	227.9	185.7	165.7	179.8
1953	198.7	198.7	189.4	195.7	177.0	248.7	195.8	163.5	198.2
1954	177.3	175.0	174.5	164.8	157.2	222.7	179.2	135.2	173.8
1955	185.1	219.5	220.2	213.4	162.8	281.1	224.9	174.5	210.8
1956	202.0	228.3	231.5	219.9	180.2	292.2	233.9	179.7	221.5
1957	217.1	199.4	200.7	190.2	197.1	254.3	198.5	157.1	201.8
1958	196.2	181.4	176.5	194.3	180.6	229.3	171.0	163.8	186.2
1959	207.7	202.1	198.6	182.4	194.5	254.3	186.4	157.9	198.3
1960	187.7	189.7	185.7	190.2	176.9	238.3	174.9	167.0	189.3
1961	182.8	182.8	183.5	201.2	171.7	229.7	173.6	179.0	188.5
<b>Variety stores</b>									
1946	102.2	103.8	105.3	103.5	75.7	100.2	97.4	140.7	103.5
1947	103.7	101.7	100.1	99.0	76.4	96.7	92.4	136.5	101.0
1948	104.3	96.1	98.6	99.4	76.9	93.7	90.7	136.4	99.4
1949	96.3	101.7	99.8	101.5	70.1	99.3	91.6	139.0	100.0
1950	98.4	105.7	105.5	103.8	71.3	103.7	96.7	143.9	103.9
1951	107.3	101.0	102.5	99.0	77.7	99.6	93.9	136.4	101.9
1952	102.2	109.0	112.5	117.9	73.7	107.8	103.0	162.6	111.8
1953	118.9	116.4	118.2	119.5	85.5	115.0	108.4	165.1	118.5
1954	118.0	124.3	123.7	125.3	84.7	122.7	113.8	172.5	123.4
1955	125.3	133.0	132.3	137.0	89.5	131.0	122.4	187.7	132.7
1956	144.9	139.0	146.6	147.7	104.2	136.3	136.3	202.7	144.9
1957	148.8	152.6	154.5	154.8	106.7	148.7	144.4	213.5	153.3
1958	155.6	157.4	160.1	161.2	111.8	152.8	150.3	221.9	159.2
1959	163.8	159.4	166.3	169.4	118.0	154.7	156.9	232.7	165.6
1960	165.7	175.9	173.5	173.9	118.0	170.9	164.0	237.9	172.7
1961	179.0	178.4	183.1	179.2	127.5	174.0	172.6	246.1	180.0

CHART-34



**TABLE 3. Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Concluded**  
1949=100

	Adjusted for seasonal variation				Without seasonal adjustment				Year
	I	II	III	IV	I	II	III	IV	
<b>Finance, insurance and real estate</b>									
1946 .....	79.7	81.0	82.4	83.4	80.0	81.3	82.5	82.7	81.6
1947 .....	85.7	86.9	88.3	89.8	85.9	87.2	88.3	89.3	87.7
1948 .....	91.1	92.3	94.3	96.2	91.3	92.4	94.3	95.7	93.4
1949 .....	97.2	100.3	100.6	101.9	97.3	100.4	100.7	101.5	100.0
1950 .....	103.5	105.0	106.1	107.8	103.6	105.1	106.3	107.5	105.6
1951 .....	110.3	112.5	114.7	116.0	110.4	112.4	115.1	115.7	113.4
1952 .....	116.6	117.7	118.8	120.4	116.7	117.6	119.3	120.1	118.4
1953 .....	121.7	122.0	123.8	125.3	121.6	121.8	124.3	125.0	123.2
1954 .....	126.8	129.2	130.7	132.6	126.5	129.1	131.4	132.4	129.9
1955 .....	135.4	136.2	136.8	137.8	134.8	136.4	137.5	137.5	136.5
1956 .....	139.9	140.2	141.3	144.7	138.8	140.5	142.5	144.3	141.5
1957 .....	147.1	151.1	153.0	152.5	145.4	151.6	154.8	152.0	150.9
1958 .....	153.1	154.9	157.3	159.3	150.9	155.5	159.7	158.5	156.1
1959 .....	161.2	162.8	164.2	165.8	158.6	163.6	167.0	164.8	163.5
1960 .....	167.2	169.0	170.4	171.3	164.4	169.9	173.5	170.2	169.5
1961 .....	173.1	174.5	176.3	178.0	170.2	175.5	179.5	176.9	175.5
<b>Public administration and defence</b>									
1946 .....	177.9	123.8	100.8	94.8	175.4	124.3	105.0	93.9	124.7
1947 .....	93.5	92.8	92.4	91.4	88.5	94.2	96.9	90.6	92.6
1948 .....	91.3	92.4	91.9	93.4	86.0	93.9	96.6	92.6	92.3
1949 .....	93.2	99.7	102.9	103.3	88.3	101.2	108.1	102.5	100.0
1950 .....	104.0	103.9	107.6	111.3	98.6	104.9	112.7	110.4	106.6
1951 .....	114.2	116.5	120.1	126.0	108.8	117.0	125.2	124.9	119.0
1952 .....	134.5	135.2	137.7	138.7	129.0	135.4	143.2	137.4	136.3
1953 .....	141.3	144.3	144.8	147.1	136.0	144.5	150.4	145.7	144.2
1954 .....	148.6	149.5	152.5	155.1	143.6	149.5	158.4	153.8	151.3
1955 .....	155.1	155.6	157.5	157.0	150.3	155.6	163.9	155.5	156.3
1956 .....	158.4	158.2	159.0	159.9	153.6	158.2	165.2	158.3	158.9
1957 .....	159.0	162.2	167.1	166.0	154.5	162.5	173.6	164.3	163.7
1958 .....	167.9	171.1	171.8	174.1	163.1	171.5	178.1	172.4	171.3
1959 .....	176.5	175.3	174.6	173.8	171.4	175.7	180.7	172.3	175.0
1960 .....	174.4	177.1	178.3	181.1	169.5	177.4	184.3	179.9	177.8
1961 .....	182.5	182.6	184.7	185.9	177.3	182.5	190.8	185.0	183.9
<b>Community, recreation, business and personal service</b>									
1946 .....	88.3	89.4	89.1	90.4	86.7	89.5	91.1	90.0	89.3
1947 .....	92.0	92.1	93.5	94.1	90.1	92.2	95.8	93.7	92.9
1948 .....	95.0	95.5	96.0	96.8	92.8	95.6	98.4	96.8	95.9
1949 .....	98.3	99.7	100.5	101.4	95.7	99.8	103.2	101.3	100.0
1950 .....	101.4	102.4	103.7	105.4	96.5	102.7	106.6	105.3	103.3
1951 .....	106.3	107.7	108.9	108.4	103.2	108.1	112.0	108.3	107.9
1952 .....	110.8	111.5	112.1	113.8	107.4	112.0	115.0	113.9	112.1
1953 .....	115.3	115.4	116.0	116.3	111.6	116.1	118.8	116.5	115.7
1954 .....	115.6	117.4	117.5	118.9	112.0	118.2	120.1	119.1	117.3
1955 .....	118.5	119.5	120.2	121.3	114.8	120.4	122.9	121.3	119.9
1956 .....	123.6	125.9	128.4	130.0	119.9	126.9	131.4	129.8	127.0
1957 .....	130.2	130.1	130.9	131.2	126.7	130.9	134.0	130.9	130.6
1958 .....	134.0	134.4	135.0	137.1	130.5	135.1	138.1	136.8	135.2
1959 .....	138.7	140.7	142.3	143.7	135.0	141.4	145.6	143.4	141.4
1960 .....	145.8	146.9	147.9	148.6	141.8	147.5	151.4	148.7	147.4
1961 .....	149.0	150.8	153.8	154.9	145.0	151.4	157.4	154.9	152.2

TABLE 4. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1946-61  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Gross Domestic Product less agriculture									
1946	89.2	86.8	86.0	87.6	84.0	86.7	88.1	90.8	87.4
1947	90.8	92.2	93.5	94.1	85.0	92.5	95.6	97.6	92.7
1948	94.5	94.9	96.3	98.2	88.3	95.3	99.0	101.6	96.0
1949	98.0	99.8	100.5	101.4	91.4	100.7	103.5	104.5	100.0
1950	101.9	104.7	108.3	110.4	94.9	105.6	111.4	113.8	106.4
1951	114.0	115.0	113.8	113.3	105.6	115.7	117.1	116.8	113.8
1952	116.0	118.5	120.2	123.4	107.9	119.8	123.7	126.8	119.6
1953	124.5	125.7	125.8	125.3	116.1	127.4	129.8	128.7	125.5
1954	124.6	124.0	126.7	128.7	115.9	125.8	130.7	132.5	126.2
1955	131.9	135.4	138.8	140.3	122.6	137.7	143.0	143.9	136.8
1956	143.9	147.9	150.0	151.5	133.2	150.3	155.4	154.9	148.4
1957	152.0	151.9	151.2	148.4	140.4	153.8	156.6	151.5	150.5
1958	149.4	151.4	150.8	154.2	138.4	153.8	157.0	157.7	151.7
1959	157.7	159.9	160.5	162.4	146.6	162.4	165.8	166.0	160.2
1960	163.4	161.5	161.5	162.2	152.1	163.9	166.5	165.9	162.1
1961	162.2	165.3	169.2	170.8	150.8	167.6	174.3	174.7	166.8
Goods-producing industries less agriculture									
1946	81.1	83.0	82.3	85.0	76.4	82.6	84.4	87.8	82.6
1947	88.1	90.1	92.5	93.4	83.1	90.1	94.4	96.7	91.0
1948	94.4	95.4	96.7	98.4	88.8	95.4	99.3	101.7	96.3
1949	98.2	99.3	100.5	101.4	92.2	100.1	103.8	104.0	100.0
1950	101.8	105.2	110.2	113.1	95.5	106.0	113.5	116.0	107.7
1951	117.3	119.5	116.8	114.8	109.4	119.3	120.4	118.3	116.9
1952	118.0	119.9	122.1	126.5	109.6	120.6	126.6	129.5	121.5
1953	127.9	128.7	128.9	127.6	119.9	129.8	134.0	131.0	128.7
1954	127.3	125.9	128.5	130.2	118.2	127.0	134.1	134.1	128.4
1955	134.7	138.8	143.7	146.0	125.0	139.9	149.5	149.9	141.1
1956	150.5	154.8	157.0	158.6	138.1	156.0	164.4	162.4	155.2
1957	158.9	158.6	155.4	151.2	146.1	159.5	163.9	154.7	156.0
1958	152.1	155.7	154.5	156.6	139.3	157.4	163.8	159.9	155.1
1959	160.1	164.4	163.1	166.7	147.3	166.2	171.2	170.0	163.7
1960	167.7	162.9	162.7	162.7	154.4	164.6	170.3	166.3	163.9
1961	162.1	166.3	171.8	174.2	149.2	167.8	179.4	177.8	168.6
Commercial industries									
1946	87.7	88.6	88.7	87.9	75.5	85.4	105.0	86.4	88.1
1947	91.8	93.8	94.2	95.3	81.2	92.1	106.9	95.7	94.0
1948	95.0	95.4	97.4	99.1	83.2	93.3	115.2	98.1	97.4
1949	98.0	100.0	100.1	101.5	86.3	98.3	114.9	100.5	100.0
1950	103.2	104.3	107.5	110.3	89.6	101.6	126.4	108.5	106.5
1951	114.5	116.3	114.3	113.6	98.7	111.8	136.9	111.1	114.6
1952	118.9	122.5	123.1	126.1	100.9	116.0	150.8	122.2	122.4
1953	125.6	126.6	127.3	125.5	107.6	121.9	152.6	122.5	126.2
1954	121.6	119.9	122.5	124.9	107.2	119.3	137.9	125.7	122.5
1955	130.6	134.0	137.0	139.0	113.8	131.8	160.2	136.9	135.7
1956	143.7	147.7	148.5	150.7	123.9	144.0	175.7	147.6	147.8
1957	148.9	148.2	147.5	144.2	130.5	146.9	165.9	142.9	146.5
1958	145.9	147.7	146.6	150.5	128.1	146.7	167.8	149.1	148.0
1959	153.7	155.8	155.8	157.1	135.9	154.3	177.0	155.4	155.7
1960	159.2	156.8	156.4	157.0	140.9	154.7	179.1	154.5	157.3
1961	154.8	158.7	162.8	163.5	139.0	158.6	178.2	163.1	159.7

TABLE 4. Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, by Quarters, 1946-61 - Concluded  
1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Commercial less agriculture									
1946	84.2	84.6	85.1	87.1	78.7	84.5	87.1	90.7	85.3
1947	90.7	92.3	93.7	94.4	84.7	92.6	95.7	98.3	92.8
1948	94.8	95.0	96.6	98.5	88.2	95.5	99.2	102.4	96.3
1949	98.2	99.8	100.3	101.3	91.3	100.8	103.3	104.7	100.0
1950	101.8	104.9	108.6	110.7	94.4	105.8	111.7	114.4	106.6
1951	114.4	115.2	113.6	112.8	105.5	116.0	117.0	116.6	113.8
1952	115.1	117.8	119.5	123.0	106.6	119.3	123.1	126.8	119.0
1953	123.9	125.0	125.1	124.3	115.1	127.0	129.2	128.2	124.9
1954	123.4	122.7	125.3	127.3	114.0	124.5	129.5	131.7	124.9
1955	130.9	134.7	138.3	139.9	120.9	137.2	142.5	144.0	136.1
1956	143.7	148.0	150.4	151.8	132.3	150.7	155.8	155.6	146.6
1957	152.2	152.0	150.8	147.8	139.8	154.1	156.6	151.3	150.4
1958	148.7	150.7	149.9	153.4	136.9	153.3	156.4	157.3	151.0
1959	157.0	159.4	160.0	162.0	145.1	162.1	165.5	166.1	159.7
1960	163.0	160.6	160.5	160.9	150.8	163.3	165.6	165.1	161.2
1961	160.7	164.0	168.0	169.7	148.5	166.4	173.2	174.0	165.5
Non-commercial industries									
1946	137.9	107.6	95.1	92.5	136.4	107.8	97.6	92.0	108.4
1947	91.3	91.2	91.5	91.6	88.4	91.9	94.1	91.1	91.4
1948	92.2	93.2	93.3	94.5	89.1	94.0	96.1	94.0	93.3
1949	95.3	99.6	101.9	102.6	92.5	100.5	105.0	102.1	100.0
1950	102.8	103.0	105.5	108.1	99.7	103.5	108.5	107.5	104.8
1951	110.4	112.4	115.0	118.5	107.3	112.8	118.0	117.9	114.0
1952	123.8	124.5	126.4	127.7	120.7	124.7	129.5	127.0	125.5
1953	129.8	131.9	132.5	134.6	126.7	132.1	135.7	133.9	132.1
1954	136.6	137.7	139.8	141.7	133.6	137.8	143.2	141.0	138.9
1955	141.7	142.3	144.0	144.3	138.7	142.4	147.8	143.5	143.1
1956	145.4	146.0	147.2	148.5	142.5	146.0	150.9	147.6	146.8
1957	149.1	151.1	154.3	154.4	146.3	151.3	158.2	153.5	152.3
1958	156.0	158.5	159.9	162.2	153.1	158.9	163.6	161.2	159.2
1959	164.4	164.9	165.5	166.1	161.4	165.2	169.1	165.2	165.2
1960	167.6	170.1	171.8	174.7	164.6	170.4	175.3	174.0	171.1
1961	176.9	178.5	181.0	182.5	173.7	178.6	184.6	181.9	179.7
Index of Industrial Production									
1946	82.5	83.8	83.3	85.9	81.0	84.6	83.3	86.3	83.8
1947	89.4	90.9	93.1	93.5	88.0	91.9	92.7	93.7	91.5
1948	94.4	96.0	96.7	98.6	92.8	97.2	96.7	98.9	98.4
1949	98.1	99.5	100.8	101.3	96.5	101.0	100.9	101.6	100.0
1950	101.8	104.3	109.1	112.8	100.1	105.8	108.8	112.9	106.9
1951	116.1	118.2	117.0	114.8	113.9	119.9	117.1	115.1	116.6
1952	116.5	118.9	122.1	126.8	114.4	120.6	121.7	126.9	120.9
1953	129.2	129.8	129.0	127.1	127.5	131.9	129.0	127.7	129.1
1954	127.9	126.6	128.3	129.5	125.8	128.7	128.4	130.9	128.5
1955	135.4	139.9	145.5	147.4	132.9	142.2	145.1	148.8	142.3
1956	149.9	154.2	156.5	158.7	146.6	156.3	156.7	160.1	154.9
1957	158.5	157.0	154.5	150.7	155.5	158.4	155.5	152.2	155.4
1958	151.8	154.6	153.4	156.8	148.6	155.9	154.9	158.1	154.4
1959	162.2	166.6	166.4	169.3	159.3	168.4	166.5	170.2	166.1
1960	171.4	166.8	165.7	166.4	168.7	168.8	164.6	167.4	167.4
1961	166.1	170.6	176.0	179.5	163.7	172.6	174.5	180.8	172.9

**TABLE 5. Industry Weights, 1949 and 1935-39**  
Gross Domestic Product at factor cost originating by industry

	1949 weight base		1935-39 weight base	
	Division	Group or industry	Division	Group or industry
	per cent of total			
Gross Domestic Product .....	100.000	100.000	100.000	100.000
Goods-producing industries .....	(53.080)		(49.501)	
Agriculture .....	10.714	10.714	10.725	10.725
Forestry .....	2.108	2.108	1.404	1.404
Fishing and trapping .....	0.540		0.532	
Fishing .....		0.457		0.379
Trapping .....		0.083		0.153
Mining .....	3.245		5.329	5.329
Metals .....		1.925		
Non-metals .....		0.268		
Fuels .....		0.915		
Other .....		0.137		
Manufacturing .....	27.340		24.242	
Non-durable manufacturing .....	(14.742)		(14.959)	
Foods and beverages .....		3.814		4.509
Tobacco and tobacco products .....		0.248		0.417
Rubber products .....		0.430		0.679
Leather products .....		0.508		0.592
Textiles .....		1.623		1.452
Clothing .....		1.801		1.791
Paper products .....		2.649		2.073
Printing, publishing and allied industries .....		1.273		1.450
Products of petroleum and coal .....		0.513		0.407
Chemicals and allied products .....		1.359		1.267
Miscellaneous manufacturing industries .....		0.524		0.322
Durable manufacturing .....	(12.598)		(9.283)	
Wood .....		2.108		1.521
Iron and steel products .....		4.026		2.792
Transportation equipment .....		2.651		1.586
Non-ferrous metal products .....		1.601		1.986
Electrical apparatus and supplies .....		1.418		0.750
Non-metallic mineral products .....		0.794		0.648
Construction .....	6.379	6.379	3.697	3.697
Electric power and gas utilities .....	1.646		2.395	
Electric power utilities .....		1.480		2.210
Gas utilities .....		0.166		0.185
Other goods industries n.e.c. ....	1.108		1.177	
Contract drilling (excluding drilling for oil and gas) .....		0.045		0.057
Manufacturing repair service .....		0.819		0.663
Municipal waterworks .....		0.244		0.457
Service-producing industries .....	(46.920)		(50.499)	
Transportation, storage and communication .....	8.363		9.722	9.722
Transportation .....		(6.528)		
Air transport .....		0.150		
Railway transport .....		3.594		
Passenger transport (urban, suburban and interurban) .....		0.815		
Water transportation and stevedoring .....		1.029		
Other transportation .....		0.940		

TABLE 5. Industry Weights, 1949 and 1935-39 — Concluded

Gross Domestic Product at factor cost originating by industry

	1949 weight base		1935-39 weight base	
	Division	Group or industry	Division	Group or industry
	per cent of total			
<b>Service-producing Industries — Concluded:</b>				
Storage .....		(0.230)		
Grain elevators .....		0.188		
Other .....		0.044		
Communication .....		(1.605)		
Telephone .....		0.805		
Other communication .....		0.800		
<b>Trade .....</b>	<b>14.562</b>		<b>12.851</b>	
Wholesale trade .....		(4.995)		4.062
Wholesalers proper .....		2.871		
Other wholesalers .....		2.124		
Retail trade .....		(9.587)		8.789
Grocery and combination stores (chain) .....		0.233		
Grocery and combination stores (independent) .....		0.721		
Other food and beverage stores .....		0.556		
General stores .....		0.351		
Department stores .....		1.528		
Variety stores .....		0.298		
Motor vehicle dealers .....		0.850		
Garages and filling stations .....		0.529		
Men's clothing stores .....		0.220		
Family clothing stores .....		0.196		
Women's clothing stores .....		0.230		
Shoe stores .....		0.140		
Hardware stores .....		0.294		
Lumber and building material dealers .....		0.362		
Furniture, appliance and radio stores .....		0.375		
Fuel dealers .....		0.160		
Drug stores .....		0.332		
Jewellery stores .....		0.172		
Other stores .....		2.022		
<b>Finance, insurance and real estate .....</b>	<b>9.127</b>		<b>12.117</b>	
Banking .....		1.121		1.469
Rents .....		5.545		7.618
Other finance, insurance and real estate .....		2.461		3.030
<b>Public administration and defence .....</b>	<b>4.666</b>		<b>4.590</b>	
Federal administration and defence .....		2.612		1.828
Provincial government .....		1.046		1.309
Municipal and other local government .....		1.008		1.453
<b>Community, recreation, business and personal service .....</b>	<b>10.202</b>		<b>11.219</b>	<b>11.219</b>
Community service .....		(4.199)		
Education .....		1.588		
Health service .....		(2.012)		
Hospitals .....		0.931		
Other health .....		1.081		
Other community service .....		0.599		
Recreation service .....		0.471		
Business service .....		1.260		
Personal service .....		(4.272)		
Restaurants, cafes and taverns .....		0.870		
Dyeing, cleaning, pressing and laundries .....		0.395		
Hotels, motels and lodging houses .....		1.948		
Other personal service .....		1.059		

**TABLE 6. Comparison of Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin, with Constant Dollar Expenditure on Gross National Product and on Gross Domestic Product, at Market Prices, by Years, 1935-61**  
1949 = 100

	1935	1936	1937	1938	1939	1940	1941
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	49.7	52.4	56.7	56.5	60.2	69.2	80.6
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	47.0	49.1	54.0	54.3	58.3	66.8	76.4
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	49.8	51.8	56.2	56.5	60.7	69.6	78.4
	1942	1943	1944	1945	1946	1947	1948
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	95.0	99.0	103.0	97.0	89.8	93.8	97.1
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	90.7	94.0	97.5	95.2	93.3	94.5	96.3
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	92.3	95.7	99.1	96.9	94.2	94.7	95.8
	1949	1950	1951	1952	1953	1954	1955
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	100.0	106.4	114.6	122.7	126.7	123.9	136.3
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	100.0	106.9	113.5	122.5	127.2	123.5	134.2
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	100.0	107.0	113.0	123.0	127.2	123.0	133.1
	1956	1957	1958	1959	1960	1961	
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	147.7	147.0	148.9	156.5	158.5	161.4	
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	145.7	147.6	149.3	153.9	156.8	159.7	
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	146.0	147.5	149.6	153.7	156.9	159.7	

<sup>1</sup> See Table 1.

<sup>2</sup> Obtained by indexing the constant dollar expenditure series published in *National Accounts Income and Expenditure* (annual).

<sup>3</sup> Constant dollar expenditure at market prices (line 2) plus interest and dividends paid to non-residents, minus interest and dividends received from non-residents, minus residual error of estimate (balancing item between G.N.E. and G.N.P. current dollar aggregates), all expressed in constant dollars. This series contains constant dollar indirect taxes less subsidies but is otherwise conceptually the same as the industry of origin series shown on line 1.

**TABLE 7. Quantity or Constant Dollar Index Comparison of Gross Domestic Product at Factor Cost, by Industry of Origin, with Expenditure on Gross National Product and on Gross Domestic Product, at Market Prices, 1947-61**  
Seasonally adjusted quarterly indexes, 1949 = 100

	I	II	III	IV	I	II	III	IV	I	II	III	IV
	1947				1948				1949			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	91.8	93.6	94.0	95.0	94.8	95.2	97.1	98.7	97.7	100.0	100.3	101.6
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	92.0	96.7	94.5	94.9	94.2	96.0	97.0	97.9	97.0	99.4	101.5	102.1
Expenditure on Gross Domestic Product at market prices, excluding residual error of estimate <sup>3</sup> .....	92.0	97.4	94.0	95.5	92.7	95.3	97.3	97.9	96.5	99.6	102.8	101.2
	1950				1951				1952			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	103.2	104.2	107.4	110.1	114.1	115.9	114.4	114.0	119.3	122.6	123.4	126.2
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	104.5	104.5	107.9	110.7	114.2	115.7	113.2	110.9	119.6	121.1	123.6	125.9
Expenditure on Gross Domestic Product at market prices, excluding residual error of estimate <sup>3</sup> .....	105.3	105.3	105.4	112.1	114.0	114.7	112.8	110.3	119.1	122.2	124.7	125.8

See footnotes at end of table.

**TABLE 7. Quantity or Constant Dollar Index Comparison of Gross Domestic Product at Factor Cost, by Industry of Origin, with Expenditure on Gross National Product and on Gross Domestic Product, at Market Prices, 1947-61 - Concluded**  
Seasonally adjusted quarterly indexes, 1949 = 100

	I	II	III	IV	I	II	III	IV	I	II	III	IV
	1953				1954				1955			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	126.0	127.0	127.7	126.3	122.9	121.3	124.0	126.3	131.5	134.7	137.6	139.4
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	126.1	127.4	127.6	127.9	123.0	122.4	123.8	124.9	129.5	134.0	136.5	136.5
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	124.8	126.5	128.7	128.7	121.9	121.9	123.4	124.8	129.7	132.8	135.1	135.1
	1956				1957				1958			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	143.9	147.6	148.4	150.5	148.9	148.5	148.1	145.1	146.7	148.6	147.7	151.5
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	143.0	144.6	146.5	148.8	148.2	147.2	148.5	146.3	147.0	149.0	150.3	150.9
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	143.2	144.0	146.8	150.0	147.8	147.1	148.7	146.5	146.0	150.0	151.5	151.1
	1959				1960				1961			
Gross Domestic Product at factor cost, by industry of origin <sup>1</sup> .....	154.6	156.5	156.6	157.9	160.0	157.9	157.6	158.5	156.7	160.3	164.3	165.0
Expenditure on Gross National Product, at market prices <sup>2</sup> .....	152.3	154.0	154.1	155.1	157.8	155.5	155.8	158.0	154.1	158.2	162.3	164.0
Expenditure on Gross Domestic Product, at market prices, excluding residual error of estimate <sup>3</sup> .....	152.2	153.9	153.9	154.7	157.9	155.2	156.3	158.2	155.3	158.0	162.2	163.2

<sup>1</sup> See Table 3.

<sup>2</sup> Obtained by indexing the constant dollar expenditure series published in *National Accounts Income and Expenditure* (quarterly).

<sup>3</sup> Constant dollar expenditure on G.N.P. at market prices (line 2) plus interest and dividends paid to non-residents, minus interest and dividends received from non-residents, minus residual error of estimate (balancing item between G.N.E. and G.N.P. current dollar aggregates), all expressed in constant dollars. This series contains constant dollar indirect taxes less subsidies but is otherwise conceptually the same as the industry of origin series shown on line 1.

**TABLE 8. Industry Composition of Employed Labour Force in Canada, 1946-61**

	1946	1947	1948	1949	1950	1951	1952	1953
	percentage contribution							
<b>Totals</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Goods-producing industries <sup>1</sup> .....	60.9	59.2	59.1	59.4	58.4	57.1	54.9	54.4
Service-producing industries <sup>2</sup> .....	39.1	40.8	40.9	40.6	41.6	42.9	45.1	45.6
Agriculture .....	25.4	23.2	22.5	21.9	20.5	18.4	17.2	16.4
Non-agricultural industries .....	74.6	76.8	77.5	78.1	79.5	81.6	82.8	83.6
Industries within the Index of Industrial Production .....	28.3	28.4	28.3	29.1	28.9	29.0	28.7	29.3
Mining .....	1.6	1.4	1.5	1.7	1.5	1.5	1.8	1.7
Manufacturing .....	26.0	26.2	26.0	26.5	26.5	26.5	25.8	26.5
Electric power and gas utilities .....	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1
Other industries .....	71.7	71.6	71.7	70.9	71.1	71.0	71.3	70.7
	1954	1955	1956	1957	1958	1959	1960	1961
<b>Totals</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Goods-producing industries <sup>1</sup> .....	53.7	53.4	52.7	52.2	50.6	49.5	47.7	47.2
Service-producing industries <sup>2</sup> .....	46.3	46.6	47.3	47.8	49.4	50.5	52.3	52.8
Agriculture .....	16.7	15.3	13.9	13.0	12.5	11.8	11.3	11.1
Non-agricultural industries .....	83.3	84.7	86.1	87.0	87.5	88.2	88.7	88.9
Industries within the Index of Industrial Production .....	28.4	28.8	29.0	29.4	28.9	28.3	27.5	27.6
Mining .....	1.9	2.0	2.1	2.1	1.9	1.5	1.6	1.3
Manufacturing .....	25.3	25.6	25.7	26.0	25.6	25.5	24.7	25.0
Electric power and gas utilities .....	1.2	1.2	1.2	1.3	1.4	1.3	1.2	1.3
Other industries .....	71.6	71.2	71.0	70.6	71.1	71.7	72.5	72.4

<sup>1</sup> Includes agriculture, forestry, fishing, trapping, mining, manufacturing, electric power and gas utilities, construction, contract drilling, manufacturing repair service, water and sanitary service and other public utilities.

<sup>2</sup> Includes transportation, storage, communication, trade, finance, insurance, real estate, public administration and defence, community service, recreation service, business service and personal service.

Source: Percentages based on data supplied by Special Surveys Division, D.B.S. including *Labour Force Survey* and special tables.



APPENDIX A

SELECT BIBLIOGRAPHY



## APPENDIX A

### Select Bibliography

- Alterman, J. and Jacobs, E.E. "Estimates of Real Product in the United States by Industrial Sector, 1947-1955", *Output, Input and Productivity Measurement*, Studies in Income and Wealth, Vol. 25, New York (NBER) 1961.
- Barger, H. *Distribution's Place in the American Economy since 1869*, New York (NBER), 1955.
- The Transportation Industries, 1889-1946: A Study of Output, Employment and Productivity*, New York (NBER), 1951.
- Berlinguette, V.R. and Leacy, F.H. "The Estimation of Real Domestic Product by Final Expenditure Categories and by Industry of Origin in Canada", *Output, Input and Productivity Measurement*, Studies in Income and Wealth, Vol. 25, New York (NBER), 1961.
- Buchanan, J.M. and Forte, F. "The Evaluation of Public Services", *The Journal of Political Economy*, Volume LXIX, April, 1961, The University of Chicago Press.
- Carter, C.F. "Index Numbers of the Real Product of the United Kingdom", *Journal of the Royal Statistical Society*, Vol. CXV, Part I, 1952, London.
- David, Paul A. "The Deflation of Value Added", *The Review of Economics and Statistics*, May, 1962, Harvard University Press.
- Dominion Bureau of Statistics. *National Accounts, Income and Expenditure, 1926-1956*, Ottawa, 1958, Catalogue No. 13-502.
- Revised Index of Industrial Production, 1935-1957*, Ottawa, 1959, Catalogue No. 61-502.
- Revised Index of Industrial Production, 1935-1951*, Ottawa, 1952, Reference Paper No. 34.
- The Inter-Industry Flow of Goods and Services, Canada, 1949*, (and Supplement,) Ottawa, 1956 and 1960, Catalogue No.'s 13-510 and 13-513.
- Seasonally Adjusted Economic Indicators, 1947-1955*, Ottawa, 1957, Catalogue No. 61-503.
- Industry Selling Price Indexes, 1956-1959*, Ottawa, 1961, Catalogue No. 62-515.
- Geary, R.C. "The Concepts of the Net Volume of Output with Special Reference to Irish Data", *Journal of the Royal Statistical Society*, Vol. 107, Parts III and IV, 1944, London.
- Gilbert, Milton "The Problem of Quality Changes and Index Numbers", *Monthly Labour Review*, September, 1961, United States Department of Labour.
- Hood, Wm. C., and Scott, A. *Output, Labour and Capital in the Canadian Economy*, Royal Commission on Canada's Economic Prospects, Ottawa, 1957.
- Horner, F.B. "The Meaning of Production Indexes", *The Economic Record*, March, 1961, Melbourne University Press.
- Jaszi, George "The Measurement of Aggregate Economic Growth", *The Review of Economics and Statistics*, Volume XLIII, November, 1961, Harvard University Press.
- Kendrick, John W. *Productivity Trends in the United States*, Princeton University Press, 1961.
- Marimont, Martin L. "G.N.P. by Major Industries", *Survey of Current Business*, October, 1962, United States Department of Commerce.
- Nicholson, J.L. "National Income at Factor Cost or Market Prices?", *The Economic Journal*, Volume LXV, June, 1955, London.
- Some Problems in the Measurement of Real National Income*, Income and Wealth Series IV, New York (NBER), 1955.
- Organization for Economic Co-operation and Development, *Seasonal Adjustment on Electronic Computers*, O.E.C.D., Paris, 1961. Report and proceedings of an international conference, Paris, November, 1960, sponsored by O.E.E.C. in collaboration with the Conference of European Statisticians.
- Reddaway, W.B. "Movements in the Real Product of the United Kingdom, 1946-1949", *Journal of the Royal Statistical Society*, Series A, Vol. CXIII, Part IV, 1950, London.
- Schultze, Charles L. *Prices, Costs and Output - for the post-war decade: 1947-1957*, supplementary paper of the Committee for Economic Development, New York, 1960.
- Shiskin, Julius *Signals of Recession and Recovery*, New York (NBER), 1961.
- Stone, R. *Quantity and Price Indexes in National Accounts*, O.E.E.C., Paris, 1956.
- Input, Output and National Accounts*, O.E.E.C., Paris, 1961.
- United Nations. *Survey of National Accounting Practices*, E/CN. 3/291, New York, 1962.
- A System of National Accounts and Supporting Tables*, Studies in Methods, Series F, No. 2, Rev. 1, New York, 1960.



## APPENDIX B

### DESCRIPTION OF ANNUAL OR BENCH-MARK INDEXES



APPENDIX B

Description of Annual or Bench-mark Indexes

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Gross Domestic Product .....	100,000				
Goods-producing industries .....	53,080				
Agriculture .....	10,714	000-079			
Agriculture (excluding agricultural service).		001-069	Net output	1958	<p>Value added in constant dollars was computed by deducting constant dollar input from constant dollar output. Output includes sales of produce into commercial channels, produce consumed by farmers, their families and hired workers and an adjustment for farm-held inventories. No attempt was made to obtain provincial indexes of net output. Individual commodities and services were combined using base-period-weighted accrued prices received by farmers.</p> <p>Most of the data were obtained from published and unpublished DBS records although some data were obtained from other government departments, trade journals, and U.S.A. government departments.</p> <p>Output of certain products was measured by marketings adjusted for change in inventory. These products include the crops wheat, oats, barley, rye, flaxseed and corn.</p> <p>A special adjustment was made to wheat in order to take account of the quality of the crop. Data for inspections and receipts of wheat by the Canadian Wheat Board were used to obtain a breakdown of wheat by grade and by condition. From these data a constant dollar series reflecting both grade and condition was obtained.</p> <p>For certain series, sales data were combined with income-in-kind data and inventory-change data to give a measure of output. These series included fruits, vegetables, dairy products, eggs and livestock. The inventory change was applicable only to livestock, for which an eleven-type breakdown was used. Horses exported and those used as materials in the slaughtering and meat-packing industry are included in farm production; other farm horse production changes are considered to be changes in farm capital stock and are omitted.</p> <p>For certain other series the measure was production or production adjusted for seed requirements. The adjustment for seed requirements was made in order to approximate unduplicated output. Quantities at base period unit values gave the constant dollar series. Sixty-three items were treated in this manner, the principal ones of which are dry beans and peas, soybeans, potatoes, sugar beets, mustard seed, sunflower seed and rapeseed, forage seed crops, vegetable field root seeds, tobacco, horticultural products, flax products, maple products, forest products, wool, honey and wax. For products from fur farms, 15 types of pelts, either taken or sold, were used along with an adjustment for inventory change of live animals on farms.</p> <p>In order to approach a measure of economic production, for some products it was necessary to use quantities exported, railway loadings or quantities used in other industries. These products include buckwheat, mixed grain, hay and straw. If total production had been used, there would have been double counting in that grain and hay, for example, fed to livestock would be counted a second time in the finished livestock products.</p> <p>Production of four types of poultry meat was used. An adjustment was made for inventory change using numbers of hens and chickens, turkeys, geese and ducks on farms.</p> <p>In computing input, only those items are used which are tangible, directly related to output and currently chargeable to production. For most items of input, quantity estimates were available, but for a few items such as machinery spare parts, insecticides and nursery stock, value estimates prepared by the Farm Finance Section of the Agricultural Division, DBS, were deflated with appropriate price indexes. In excess of 100 series were computed by applying base-period unit values to current quantities. The series include electricity, field root crops for seed, lime, feeds (including high-protein feeds), grain purchased from western elevators, purchases of freight-assisted grains, fertilizers, feeder cattle and calves, gasoline and oil for automobiles, trucks, combines, tractors and gasoline engines.</p> <p>The gallonage of gas and oil used by automobiles and trucks was estimated on the basis of the consumption per vehicle obtained from the 1952 Farm Expenditure Survey. The constant dollar value for grease was assumed to be one quarter that of oil. Base-period prices for gasoline, oil, tires and tubes were weighted by unit value by province. The cost of tires and tubes used by cars, trucks, tractors, etc., was estimated using available data from various tests undertaken in Canada<sup>2</sup> and the United States.<sup>3</sup></p> <p>These tests provided data on average wear and tear thus permitting estimates to be made on tire and tube life. This information along with estimated hours of usage, types of vehicle and available price information allowed overall cost estimates to be made.</p> <p>The use of combines per year in the early period was based on acreage, 500 acres in the prairie provinces and 200 acres in the other provinces. In the later period the use was based on the percentage of the total crop which could be harvested by combine, estimated to be 95 per cent.</p> <p>Certain items such as seed for field root crops were estimated on the basis of seed requirements. Containers were estimated on the volume of output of those products for which containers are used.</p>

See footnotes at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Agriculture - Concluded					
Agricultural and related service .....		073-079			Agricultural services such as experimental farms operated by governments were covered in government service. Other agricultural services were not measured separately, but were assumed to move with the agriculture industry. These services include custom threshing, ploughing, silo-filling, hay baling, landscape gardening, tree surgery, poultry hatching, animal breeding services, etc.
Forestry .....	2.108	080-089			
Forestry (excluding forestry service)		080	Gross output	1959	Output in forestry for the period from 1940-58 was based on production of the principal products weighted with base-period unit values. Output of farm forestry was computed in a similar manner, then deducted from forestry and added to agriculture. The principal products are logs, bolts, pulpwood, fuelwood, fence posts, round mining timber, poles and piling.  In the 1935-39 period, production data were not available and apparent production was used. The apparent production of each forest product was estimated from consumption with an adjustment for exports (+) and imports (-). An adjustment was made for change in inventory holdings of logs, bolts and pulpwood. The output of farm forestry was composed of the value of forest products sold off farms and forest products used on farms, deflated with suitable price indexes.
Forestry service .....		089			Forestry services were not measured separately; services such as forestry patrol, fire inspection, forest nurseries, reforestation, etc., conducted by government departments, were included with government service; if these services were not conducted by government departments, their output was assumed to move with total forestry.
Fishing and trapping .....	0.540	091-097			
Fishing .....	0.457	091-095			
Fishing (excluding fishery service)		091-093			
Sea fisheries .....	0.374	093	Gross output	1959	Quantities of sea fish caught and landed, weighted with base-period unit values, gave a constant dollar series for sea fishing. Value added by fishermen through direct marketings and through semi-processing has been omitted for lack of consistent data. It has been assumed that this activity moves with the volume of landings. Newfoundland sea fisheries data first became available in 1951. Estimates were made for Newfoundland in 1949 and 1950 on the basis of 1951 data inclusive and exclusive of Newfoundland. A change in the classification of sea fish in 1951 necessitated a change of base with a link to the 1949-based series.
Inland fisheries.....	0.083	091	Gross output	1959	For inland fishing, processing has been included with landings since the annual Census of Manufacturing did not cover fish processing in the inland division. Quantities of fish marketed, at base period unit values gave a constant dollar series for inland fishing.  The two series, sea and inland, were combined to give total fisheries.
Fishery service .....		095			Fishery services were not measured separately. Government departments engaged in the operation of fish hatcheries, fishing inspection and protection services were included in government service. The output of non-government organizations engaged in these operations was assumed to move with the output of the fishing industry.
Trapping .....	0.083	097	Gross output	1959	Numbers of wildlife pelts by types, by fur-year, weighted with base period unit values gave a constant dollar series for hunting and trapping. A 2-season moving average was applied in order to bring the series closer to a calendar year basis.
Mining (excluding contract drilling other than oil and gas).	3.245	101-117 part 119 121-159			
Metals .....	1.925	101-117 part 119			
Gold (auriferous quartz and placer mines only).	0.575		Gross output		
Iron ore .....	0.099		Gross output		
Other metals .....	1.251		Gross output		
Non-metals .....	0.268	131-139			
Asbestos .....	0.189		Gross output		
Gypsum .....	0.022		Gross output		
Salt .....	0.004		Gross output		
Other non-metals .....	0.053		Gross output		

See footnotes at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Mining (excluding contract drilling other than oil and gas) - Concluded:					
Fuels .....	0.915	121 - 126			
Coal .....	0.553		Gross output		
Petroleum .....	0.327		Gross output		
Natural gas .....	0.035		Gross output		
Quarrying and sand pits .....	0.137	153 - 159			
Sand and gravel pits .....	0.085		Gross output		
Stone quarries .....	0.052		Gross output		
Manufacturing (excluding repair service).	27.340	2 - 3			
Non-durable manufacturing .....	14.742				
Foods and beverages .....	3.814	20 - 22			
Foods .....	2.896				
Meat products .....	0.523	200			
Slaughtering and meat packing .....	0.506	part 200	Net output		
Animal oils and fats .....	0.004	part 200	Gross output		
Sausage and sausage casings ..	0.013	part 200	Gross output		
Dairy products .....	0.450				
Butter and cheese .....	0.350	201	Net output		
Concentrated milk products .....	0.053	203	Net output		
Process cheese .....	0.030	207	Net output		
Other dairy products .....	0.017	209	Net output		
Canning and processing .....	0.453				
Fruit and vegetable preparations.	0.254	212	Net output		
Fish processing .....	0.199	210	Net output		
Grain mill products .....	0.322				
Flour mills .....	0.140	214	Net output		
Feeds .....	0.135				
Prepared stock and poultry feeds.	0.121	216	Net output		
Feed mills .....	0.014	213	Net output		
Breakfast foods .....	0.047	215	Net output		
Bakery products .....	0.558				
Biscuits .....	0.135	213	Net output		
Bread and other bakery products.	0.423	219	Net output		
Miscellaneous foods .....	0.590				
Confectionery .....	0.214	225	Materials		
Sugar refining .....	0.107	227	Net output		
Macaroni and kindred products	0.011	part 228	Net output		
Miscellaneous food preparations.	0.258	part 228	Net output		
Beverages .....	0.918				
Carbonated beverages .....	0.231	220	Net output		
Distilled liquors .....	0.203	221	Net output		
Breweries .....	0.463	222	Net output		
Wines .....	0.021	224	Net output		
Tobacco and tobacco products .....	0.248				
Tobacco, cigars and cigarettes .....	0.228	part 230	Net output		
Tobacco processing and packing	0.020	part 230	Net output		
Rubber products .....	0.430	236 - 239	Net output		
Leather products .....	0.508				
Leather boots and shoes .....	0.307	241	Gross output		
Leather tanneries .....	0.088	part 247	Gross output		
Other leather products .....	0.113				
Leather gloves and mittens .....	0.025	245	Net output		
Belting leather .....	0.003	part 247	Net output		
Leather boot and shoe findings	0.007	part 249	Gross output		
Miscellaneous leather goods n.e.c.	0.078	part 249	Gross output		

For a description of the series see DBS Reference Paper, *Revised Index of Industrial Production, 1935-1957*, Catalogue No. 61-502. For current monthly data see *DBS Index of Industrial Production*, Catalogue No. 61-005.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Manufacturing (excluding repair service) - Continued:					
Textiles .....	1.623				
Cotton goods .....	0.507				
Cotton thread .....	0.020	251	Materials		
Cotton yarn and cloth .....	0.473	252	Net output		
Miscellaneous cotton goods .....	0.014	254	Gross output		
Wool goods .....	0.300				
Wool cloth .....	0.182	255	Gross output		
Wool yarn .....	0.065	257	Gross output		
Miscellaneous wool goods .....	0.053	259	Gross output		
Synthetic textiles and silk .....	0.429	260	Net output		
Other textile products .....	0.387				
Dyeing and finishing of textiles .....	0.053	261	Gross output		
Narrow fabrics .....	0.037	262	Materials		
Awnings, tents, and sails .....	0.020	263	Materials		
Cotton and jute bags .....	0.025	266	Materials		
Cordage, rope and twine .....	0.034	265	Gross output		
Oilcloth, linoleum and other fabrics .....	0.068	267	Gross output		
Fabric auto accessories .....	0.017	part 269	Gross value deflated with a price index		
Embroideries, pleating .....	0.028	part 269	Man-hours		
Carpets, mats and rugs .....	0.045	264	Gross output		
Miscellaneous textiles, n.e.c. ....	0.060	part 269	Materials		
Clothing .....	1.801				
Men's, women's and children's clothing .....	1.113				
Men's factory clothing .....	0.507	part 272	Gross output		
Women's factory clothing .....	0.497	part 273	Gross output		
Children's factory clothing .....	0.066	270	Gross output		
Men's clothing contractors .....	0.030	part 272	Gross value deflated with a price index		
Women's clothing contractors .....	0.013	part 273	Gross value deflated with a price index		
Knitting mills .....	0.394				
Hosiery .....	0.181	274	Net output		
Other knitted goods .....	0.213	275	Gross output		
Miscellaneous clothing .....	0.294				
Corsets, girdles and foundation garments .....	0.048	276	Gross output		
Fur dressing and dyeing .....	0.028	part 277	Man-hours		
Fur goods .....	0.121	part 277	Gross output		
Fabric gloves and mittens .....	0.007	part 279	Gross output		
Hats and caps .....	0.064	278	Gross output		
Oiled and waterproof clothing .....	0.009	part 279	Gross output		
Miscellaneous clothing n.e.c. ....	0.017	part 279	Gross output		
Paper products .....	2.649				
Pulp and paper .....	2.108	294	Net output		
Roofing paper .....	0.093	296	Net output		
Other paper products .....	0.448				
Paper boxes and bags .....	0.235	292	Materials		
Miscellaneous paper products n.e.c. ....	0.213	299	Gross output		

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Manufacturing (excluding repair service)—Continued:					
Printing, publishing and allied industries.	1.273				
Printing and publishing .....	0.603	part 309	Value of materials deflated with a price index		
Publishing (only) of periodicals	0.082	part 309	Value of materials deflated with a price index		
Other printing .....	0.588				
Printing and bookbinding .....	0.393	part 301	Value of materials deflated with a price index		
Trade composition .....	0.014	part 301	Adjusted wage-earners		
Engraving, stereotyping and electrotyping.	0.093	part 303	Adjusted wage-earners		
Lithographing.....	0.088	part 303	Value of materials deflated with a price index		
Products of petroleum and coal ....	0.513				
Coke products .....	0.059	part 373	Net output		
Petroleum products (petroleum refining and lubricating oils and grease).	0.454	375	Gross output		
Chemicals and allied products .....	1.359				
Acids, alkalis and salts .....	0.205	380	Net output		
Fertilizers .....	0.141	382	Net output		
Medicinal and pharmaceutical preparations.	0.217	383	Gross value deflated with a cost of production index		
Soaps, washing compounds, etc...	0.175	385	Net output		
Paints, varnishes and lacquers....	0.179	384	Net output		
Vegetable oil mills .....	0.042	387	Net output		
Other chemicals .....	0.400				
Toilet preparations .....	0.054	386	Materials		
Primary plastics .....	0.050	388	Net output		
Inks .....	0.021	part 389	Gross output		
Adhesives .....	0.015	part 389	Net output		
Polishes and dressings .....	0.026	part 389	Gross output		
Compressed gases .....	0.045	part 389	Net output		
Coal tar distillation .....	0.017	part 389	Gross output		
Miscellaneous chemicals n.e.c.	0.172	part 389	Gross output		
Miscellaneous manufacturing Industries.	0.524				
Brooms, brushes and mops .....	0.046	391	Gross output		
Fountain pens and pencils .....	0.037	part 394	Gross output		
Musical instruments .....	0.021	393	Gross output		
Plastic products .....	0.049	392	Materials		
Scientific and professional equipment.	0.105	395	Gross output		
Sporting goods .....	0.027	part 396	Gross output		
Toys and games .....	0.023	part 396	Man-hours		
Typewriter supplies .....	0.011	part 394	Gross output		
Artificial flowers and feathers ....	0.009	part 399	Man-hours		
Buttons and fasteners .....	0.027	part 399	Gross output		
Candles .....	0.007	part 399	Materials		
Hair goods .....	0.003	part 399	Gross output		
Artificial ice .....	0.029	part 399	Gross output		
Electric lamps and lamp shades	0.017	part 399	Gross output		
Pipes, lighters and smokers' supplies.	0.013	part 399	Gross output		

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Manufacturing (excluding repair service) - Continued:					
Miscellaneous manufacturing industries - Concluded:					
Electric, neon and other signs ....	0.035	part 399	Man-hours		
Rubber and metal stamps and stencils.	0.010	part 399	Man-hours		
Statuary, art goods and novelties	0.014	part 399	Man-hours		
Umbrellas .....	0.003	part 399	Gross output		
Miscellaneous manufacturing industries, n.e.c.	0.038	part 399	Gross output		
Durable manufacturing .....	12.598				
Wood products .....	2.108				
Furniture .....	0.460	286	Materials		
Saw and planing mills .....	1.444				
Hardwood flooring .....	0.031	part 283	Net output		
Sash, door and planing mills .....	0.297	part 283	Materials		
Sawmills .....	0.994	285	Net output		
Veneer and plywoods .....	0.122	281	Net output		
Other wood industries .....	0.204				
Beekeepers' and poultrymen's supplies.	0.001	part 289	Materials		
Wooden boxes and baskets .....	0.059	287	Materials		
Cooperage .....	0.012	part 289	Gross output		
Excelsior .....	0.002	part 289	Gross output		
Lasts, trees and shoe findings..	0.009	part 289	Wage-earners		
Morticians' goods .....	0.021	288	Gross output		
Woodenware .....	0.007	part 289	Materials		
Wood turning .....	0.018	part 289	Materials		
Miscellaneous wood products, n.e.c.	0.075	part 289	Materials		
Iron and steel products .....	4.026				
Agricultural implements .....	0.453	311	Net output		
Boilers, tanks and platework .....	0.178	314	Gross value deflated with a cost of production index		
Bridge building and structural steel.	0.214	315	Materials		
Iron castings .....	0.387	320	Net output		
Hardware, tools and cutlery .....	0.261	317	Gross value deflated with a cost of production index		
Heating and cooking apparatus...	0.198	318	Net output		
Machinery .....	0.851				
Household, office and store machinery.	0.225	319	Gross output		
Industrial machinery .....	0.501	324	Composite of materials and payrolls in constant dollars		
Machine shops .....	0.098	322	Gross value deflated with a cost of production index		
Machine tools .....	0.027	323	Gross value deflated with a cost of production index		
Primary iron and steel .....	0.845	325	Net output		
Sheet metal products .....	0.359	326	Materials		
Wire and wire goods .....	0.173	327	Net output		
Miscellaneous iron and steel products.	0.107	329	Gross value deflated with a cost of production index		

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Manufacturing (excluding repair service) - Concluded:					
Transportation equipment .....	2.651				
Aircraft and parts .....	0.203	330	Adjusted man-hours		
Motor vehicles .....	1.035	334	Gross output		
Motor vehicle parts .....	0.462	335	Gross output		
Railway rolling stock .....	0.621	336	Gross value deflated with a cost of production index		
Shipbuilding .....	0.261	337	Gross value deflated with a cost of production index		
Other transportation equipment....	0.069				
Bicycles and parts .....	0.023	332	Gross output		
Boat building .....	0.019	333	Materials		
Miscellaneous transportation equipment.	0.027	part 339	Adjusted man-hours		
Non-ferrous metal products .....	1.601				
Aluminum products .....	0.128	341	Net output		
Brass and copper products .....	0.241	342	Gross output		
Jewellery and silverware .....	0.121	343	Materials		
Non-ferrous metal smelting and refining.	1.028	345	Gross output		
Other non-ferrous metal products	0.083				
White metal alloys .....	0.065	347	Gross output		
Miscellaneous non-ferrous metal products.	0.018	349	Gross value deflated with a price index		
Electrical apparatus and supplies	1.418				
Batteries .....	0.065	351	Gross output		
Heavy electrical machinery .....	0.489	352	Gross value deflated with a price index		
Telecommunication equipment ....	0.142	353	Gross output		
Refrigerators, vacuum cleaners and appliances.	0.227	357	Gross output		
Miscellaneous electrical products	0.495	359	Gross value deflated with a cost of production index		
Non-metallic mineral products .....	0.794				
Hydraulic cement .....	0.117	363	Gross output		
Domestic clay products .....	0.078	part 364	Gross output		
Sand-lime brick .....	0.005	part 364	Gross output		
Concrete products .....	0.098	368	Net output		
Glass products .....	0.127	365	Net output		
Gypsum products .....	0.042	part 366	Gross output		
Lime .....	0.046	part 366	Gross output		
Salt .....	0.022	part 369	Gross output		
Other non-metallic mineral products.	0.259				
Abrasive products .....	0.083	361	Gross output		
Asbestos products .....	0.028	362	Gross output		
Imported clay products .....	0.056	part 364	Materials		
Monumental and ornamental stone	0.059	367	Gross output		
Miscellaneous non-metallic mineral products.	0.033	{ part 369 }	Gross output		
Miscellaneous products of petroleum and coal <sup>2</sup> .		{ 379 }			

See footnotes at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Construction .....	6.379	404-439	Gross output	1960	Total new construction put in place plus repair and maintenance construction done on a contract basis were measured here. Repair construction done by own labour force was measured with the volume of net output in the various industries concerned. Special deflators incorporating material price indexes and wage-rates were used. New residential construction was deflated with an index which combined residential building material prices and construction wage-rates. Non-residential construction, which includes building and engineering construction, was also deflated with appropriate indexes constructed from data on building material prices and construction wage-rates. The value of repair and maintenance construction done on a contract basis was deflated with the implied price index derived from the new construction data.
Electric power and gas utilities .....	1.646	602-604			For a description of the series, see DBS Reference Paper, <i>Revised Index of Industrial Production, 1935-1957</i> , Catalogue No. 81-502. For current monthly data see <i>DBS Index of Industrial Production</i> , Catalogue No. 61-005.
Electric power utilities .....	1.480	602	Net output		
Gas utilities .....	0.166	604			
Manufactured gas .....	0.098	part 604	Net output		
Natural gas .....	0.068	part 604	Gross output		
Other goods industries, n.e.c. ....	1.108				
Other mining n.e.c. ....					
Contract drilling (excluding drilling for oil and gas) .....	0.045	part 119	Gross output	1960	The output measure of contract drilling was based on the footage drilled. The output of contract drilling for oil and gas was assumed to move with the output of the fuel component of the mining industry.
Prospecting .....		172, 174, 179			This group includes establishments primarily engaged in surface prospecting for mineral deposits of any type. No output measure has been computed for this group; the output of this group was assumed to move with the output of total mining. (S.I.C., 101-179).
Manufacturing repair service .....	0.819	243, 249, 271, 286, 312, 317, 322, 331, 332, 346, 349, 352, 353, 399	Gross output	1951	These industries were not covered in the annual census of manufacturing. Bench-marks were calculated for the years 1930, 1941, and 1951 and intercensal years were estimated on the basis of related series such as retail trade or industrial production. Receipts from sales in 1941 and 1951 were broken down into receipts from commodity sales and receipts from services. Each component was deflated with an appropriate price index. Indexes for the 1930 and 1941 period were computed on the basis of full-time workers including working proprietors and an estimate of the full-time equivalent of part-time workers. These indexes were linked in 1941.
Shoe repair .....	0.088	243	Gross output		
Harness repair .....	0.001	249	Gross output		
Tailoring and dressmaking .....	0.126	271	Gross output		
Furniture repair .....	0.031	286	Gross output		
Blacksmithing, horseshoeing and general repair .....	0.040	312	Gross output		
Locksmiths, gunsmiths, tools and cutlery .....	0.015	317	Gross output		
Machine shops .....	0.002	322	Gross output		
Automotive repair .....	0.378	331	Gross output		
Bicycle and motorcycle repair .....	0.001	332	Gross output		
Watch, clock and jewellery repair .....	0.012	346	Gross output		
Electroplating .....	0.007	349	Gross output		
Armature rewinding .....	0.023	352	Gross output		
Radio and electrical repair .....	0.032	353	Gross output		
Taxidermy .....	--	part 399	Gross output		
Sign painting .....	0.021	part 399	Gross output		
Miscellaneous repairs .....	0.042	part 399	Gross output		
Water and sanitary service .....	0.244	608			
Municipal waterworks .....	0.244	part 608	Gross output	1959	A volume index of service rendered by municipal waterworks has been computed using the average daily consumption of water by the inhabitants of 38 Canadian cities as a basis. This series was adjusted to cover all incorporated centres having municipal waterworks by applying average daily per capita consumption of water in the 38 cities to the total population served.
Other .....		part 608			The remainder of this group was assumed to move with the portion covered.
Other public utilities .....		609			Included here are production and distribution of steam for heating and power purposes and the provision of other public utilities. No output measures have been computed as data were lacking in these areas. It was assumed that the output of these groups moves with the output of total public utilities. (S.I.C. industries 602-608 inclusive).

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Service-producing industries .....	46.920				
Transportation, storage and communication.	8.363	501-549, part 914			
Transportation .....	6.528	501-519			
Air transport and airports .....	0.150	501	Net output	1959	The services of Canadian companies were measured wherever they were performed and services of foreign carriers operating into Canada were omitted. Volume series such as passenger-miles, mail-ton-miles, and goods-ton-miles for domestic, transborder or overseas, scheduled and non-scheduled flights were combined using base-period unit values for unit toll transportation to give constant dollars. Revenue from bulk transportation and other flying services was deflated with a deflator compiled using data for zone rates for various types of service. Constant dollar inputs of fuel and oil were deducted. Airport services are assumed to move with the services covered.
Passenger transport (inter-urban).	0.260	505	Net output	1960	Revenue by source, such as passenger revenue, freight revenue, and other revenue was deflated with appropriate price indexes such as the Consumer Price Index component for bus fares, the implied price index of urban and suburban passenger service and a special freight price index. Constant dollar inputs of fuel, oil, tires and tubes were deducted.
Railway transport (including express).	3.594	508	Net output	1959	Constant dollar series were combined for passenger revenue, freight revenue, express revenue and other revenue, to give a volume of gross output. Passenger-miles and ton-mile data at base-period unit values gave the passenger and freight revenue series respectively; the implied price index derived from the passenger computation was used to deflate related passenger revenue such as sleeping car, parlour car and chair car, parcel room, baggage, station and train privileges. Buffet and dining car revenues were deflated with a special price index composed of wage-rates and food costs. A weighted ton-mile series was derived for the freight component. Ton-mile estimates were prepared for each commodity carried as well as for less-than-carload lot traffic and weighted with relative revenue per ton-mile as derived from the 1949 Waybill reports. <sup>6</sup>  Gross revenues of express companies and revenues for express privileges were deflated separately, the former with a wage-rate index based on the average pay of express employees and the latter with the inter-city motor carrier freight price index. For certain material inputs, such as fuel, rails re-laid and cross ties placed in previously constructed track, the quantities were weighted with base-period unit values. Materials such as supplies for dining and buffet service, the cost of water and power, lubricants and other supplies were deflated with suitable price indexes. A number of other materials used could not be included in inputs because of reporting difficulties.
Passenger transport (urban and suburban).	0.555	510	Net output	1960	Passenger revenue from urban and suburban transportation was deflated with an implied price index of bus fares. This price index was derived from data relating to the number of passengers carried and corresponding revenue for selected bus companies in the major cities. Inter-city passenger revenue was deflated with the matching bus fares component of the Consumer Price Index. For certain inputs such as gasoline, diesel oil, propane gas, and electric power, quantities used were weighted with base-period unit values. Lubricating oil and tire and tube costs were estimated on vehicle mileage and other related data.
Taxicab service .....	0.407	512	Gross output	1951	Personal expenditure on taxicabs (as prepared by the National Expenditure Section of the National Accounts and Balance of Payments Division) was deflated with the taxi fare component of the Consumer Price Index. The expenditure estimates were based on 1941 decennial census data and an independent estimate for 1951.
Truck transport <sup>7</sup> .....	0.497	514	Net output	1959	Freight and passenger revenue were deflated separately and a coverage adjustment applied to include other operating revenue. Passenger revenue was deflated with a price index derived from the passenger bus service industries. A special implied price index was computed for trucking using tonnage and revenue by type of commodity carried. These data are collected in an annual provincial motor transport traffic survey. The 1958 index for the industry was estimated from 1957 on the movement of employment in the Truck Transportation industry since a link was not possible.  In the 1935-46 period the truck transportation index had in it much of the influence of warehousing firms and was used to represent both trucking and warehousing. For the period from 1930 to 1941, the number of gainfully occupied persons in the trucking industry was interpolated on a straight line trend. The motor truck registration series was used to obtain estimates of fluctuations from the trend. From 1941 to 1943 inclusive, the number of employees and working proprietors of large freight motor carriers was used. From 1943 to 1947 inclusive a "deflation of operating costs" approach was used. Suitable price indexes were used to deflate the various items of fuel expenditure, maintenance costs, wages and working proprietors' earnings.  Material inputs included gasoline and diesel oil, which were weighted with base-period unit values, and lubricating oil, tires and tubes, which were assumed to move with fuel.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Transportation, storage and communication - Continued:					
Water transport .....	0.802	516	Gross output	1960	This industry covers the activities of Canadian registered ships only. Three sectors are considered for freight shipping, namely, ocean, inland and coastwise; passenger services are covered in total.
Freight:					
Ocean .....					This sector includes cargo handled by Canadian registered ships in seaborne traffic between Canada and foreign countries. The total of loadings and unloadings was used in order to take proper cognizance of the corresponding activity of these same ships when they reach foreign ports.
Inland .....					This sector includes the traffic of Canadian registered ships between Canadian and United States ports on the Great Lakes as well as iron ore handling by Canadian ships between United States ports. In the case of Canadian-flag ships' participation in shipping between United States ports, special congressional approval must be obtained; <sup>2</sup> thus ships carrying ore were assumed to return "in ballast" and their activity was measured by counting tons arriving only. Traffic between United States and Canadian ports was measured by adding together loadings and unloadings.
Coastwise .....					This sector should include all activity of Canadian registered ships plying between Canadian ports, either on the coast or on the Great Lakes. However, statistics were collected only from ports having customs service. Thus, only tons unloaded were used because of the fact that better coverage was obtained that way; loadings occur to a greater extent in non-customs' ports.  The freight shipping series for the three sectors, ocean, inland and coastwise were combined using weights based on unpublished establishment data for salaries, wages, income-in-kind, profits, and depreciation in 1949.  Adjustments for the entry of Newfoundland were made to the ocean and coastwise sectors in 1949. Newfoundland activity was added without linking.
Passenger .....					Passenger revenue was deflated with a special passenger-fare price index computed from data obtained from a letter survey of passenger fares for some of the major companies and major revenue-earning routes.
Service incidental to transportation		517			Services incidental to transportation were not measured separately. It was assumed that these services move with total transportation.
Service incidental to water transport.		518			
Stevedoring .....	0.227	part 518	Gross output	1960	The measure adopted for the stevedoring industry was based on loadings and unloadings, at the main ports, of a selection of commodities normally handled by stevedores.
Other .....		part 518			Output in the remainder of this group was not measured separately; it was assumed that these services move with total transportation.
Other transportation .....	0.036				
International bridges, tunnels and ferries.	0.028	part 519	Gross output	1960	The number of pedestrians and number of vehicles, combined using base-period unit charges, were used.
Pipelines .....	0.008	part 519	Gross output	1959	The unit of output in the oil pipelines industry was barrel-miles in both trunk and gathering lines. The index of pipelines was adjusted to reflect gas pipeline activity which commenced in 1958.
Other transportation n.e.c. ....		part 519			Output in the remainder of this group which includes such services as hearse rental and sight-seeing buses was not measured separately but was assumed to move with total transportation.
Storage .....	0.230	524-527			
Grain elevators .....	0.188	524	Gross output	1959	The measure adopted was based on the combined services of storage, drying, cleaning and elevation. Quantities of grain involved in each of these services were weighted together using base-period average charges as derived from the Board of Grain Commissioners' regulations. Average grain in store was derived by taking the visible supply of grain in Canada each week and subtracting the amount of grain in transit by rail and ship. An average of receipts and shipments was considered to be representative of the overall elevation services of the various elevators. Elevation includes the receiving of the grain, registering it, insuring it and shipping it out.
Storage and warehousing .....	0.044	527	Gross output	1959	The measure adopted was deflated revenue, with separate deflators used for revenue from storage, warehousing and trucking operations. The deflator used for revenue from trucking operations was the motor freight price index from the truck transportation industry. For the deflation of revenue from storage and warehousing, a special Paasche-type price index was computed, using a sample of the establishments reporting.

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Transportation, storage and communication - Concluded:					
Communication .....	1.605	543-549 and 914			
Radio and television broadcasting	0.174	543	Labour input	1961	An index of employment in radio and television broadcasting was used as a measure of output. This index was derived from matched employment returns, and takes account of new stations as these commenced broadcasting operations.
Telephone .....	0.805	547	Gross output	1959	The output measure was obtained by combining an index of the number of telephones with an index of the number of long distance calls. The various types of telephone (commercial, private, one-party, two-party, etc.) were weighted according to base-period "typical" charges made for each type of service. A two-year average gave an approximate mid-year value since the number of telephones was reported as of the end of each year.
Other communication service .....	0.626	549 and 914			
Telegraph and cable .....	0.186	part 549	Gross output	1960	The volume of output measure was obtained by adding the number of telegrams and cablegrams weighted with base-period unit values to deflated revenue from leased lines and wires. The implied price index from the telegram and cablegram computation was used to deflate the revenue from leased lines and wires.
Postal service .....	0.440	914	Gross output	1958	Deflated revenue was adopted as the output measure. The average of the monthly indexes was used since 1949. The monthly deflator was a specially constructed index of postage rates which included changes in rates in the month of occurrence.
Other communication service n.e.c.		part 549			The output of the remaining services was not measured separately but was assumed to move with total communication.
Trade .....	14.562	701-799			
Wholesale trade .....	4.995	701-729	Gross output	1960 <sup>9</sup>	Wholesalers are classified by 6 types of operation: (1) Wholesalers proper, (2) Petroleum bulk tank stations, (3) Assemblers of primary products, (4) Manufacturers' sales branches and offices, (5) Agents and brokers, (6) Other.  Each of the above types of operation was classified by store-type group and sub-group (where applicable). Wholesalers proper, for example, included 25 store-type groups and 77 sub-groups in 1951.  Annual data were generally lacking except in the decennial census years 1930, 1941 and 1951 when good data were available. These data were fully exploited in order to obtain an adequate measure of the volume of output movement between 1930 and 1941, and between 1941 and 1951. In the 1930-51 period, the data were developed in 1941 constant dollars. Interpolation for intercensal years was made on the basis of related series. For the 1935-46 period, the 1941 constant dollar series was indexed on the 1935-39 base and the groups combined with 1941 weights. In the 1946-58 period, the 1941 constant dollar series was indexed on a 1949 base and the groups combined with weights based on estimated gross domestic product for 1951.  <b>Volume Movements in Census Years.</b> The decennial census data were quite detailed both in regard to individual trades and to commodity content of individual trade sales. Using "sales by commodity distributed by kind of business" tables in the 1930, the 1941 and the 1951 Census of Distribution volumes it was possible to obtain a detailed dollar value of commodity sales' breakdown for most businesses in all census years. It was possible to derive these in a fairly straightforward manner in 1951 because percentages additive to 100 were published for each major kind of business within each type of wholesale trade. In 1941, however, the published data required some additional work in that major product sub-groups had to be recomputed to add, together with other groups, to 100 for the particular kind of business. Once these percentages were complete they were used to break down the total dollar value of sales in the census year for each kind of business within each type of wholesale trade. This latter operation was necessary since the "sales by commodity distributed by kind of business" tables covered only those establishments reporting a commodity breakdown. In other words coverage was not complete and it was necessary to make the assumption that the structure of commodity sales of unreporting establishments was the same as that of reporting establishments. In the year 1930, net sales (gross sales less returns) by commodity were reported. Because of many differences in classification between 1930 and the years 1941 and 1951, it was necessary to re-group the 1930 data to agree with those of 1941 and 1951.

Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Trade - Continued: Wholesale trade - Continued:					<p>Having obtained estimated sales of major commodities for each kind of business within each type of wholesale trade in 1930, 1941 and 1951, the next step was to deflate these sales in order to obtain a volume measure. All available price data in the Dominion Bureau of Statistics were utilized in order to deflate 1930 and 1951 sales detail in terms of 1941 dollars. Each 1930 and 1951 commodity total within the 152 groups in wholesalers proper, the 24 groups in assemblers of primary products, the 106 groups in manufacturers' sales branches and offices, the 109 groups in agents and brokers, the group petroleum bulk tank stations, and each of the other types of wholesale operation (for which no kind of business breakdown was available) was deflated in terms of 1941 dollars. The weighting system adopted for combining the detailed deflated data was based on 1941 expense ratios. These expense ratios are similar to census value added except that they exclude net profits while including estimated allowances for working proprietors.</p> <p><b>Intercensal Interpolators.</b> The next step was to interpolate between the census store-type bench-marks and to extrapolate from 1951, the last bench-mark. A number of possible interpolators was tested and the most suitable one selected. Various interpolators were used, e.g. deflated retail sales in a related store-type group, volume of production in a related industry, volume of production in a group of related industries, etc.</p> <p><b>Annual Volume Series.</b> In combining the store-type groups on the 1935-39 base in the 1935-46 period, the weighting system adopted was based on 1941 expense ratio data.</p> <p>In the 1946-58 period, the store-type indexes on the 1949 base were combined with weights based on estimated Gross Domestic Product at factor cost in 1951. It was assumed that the breakdown of G.D.P. at factor cost in 1949 would not differ greatly from that in 1951. The components of G.D.P. at factor cost were estimated from various sources. Certain components were either based on data taken from <i>Taxation Statistics</i> adjusted for coverage and from a fiscal to a calendar year basis, or from DBS Operating Results Surveys. These items included corporation profits, capital cost allowances and mortgage and bond interest. From these combined data, ratios to total sales were computed for each store group of wholesale trade. These ratios were applied to sales data as reported in the 1951 Census of Distribution to give an estimate of corporation profits, bond and mortgage interest and capital cost allowances. Salaries and wages were reported in the Census of Distribution and total supplementary labour income was distributed proportionally to salaries and wages. Bank and loan interest was distributed on the basis of the components of G.D.P. already mentioned, viz., salaries, wages, supplementary labour income, corporation profits, capital cost allowances and bond and mortgage interest. Net income of unincorporated business in wholesale trade as estimated for the national accounts was distributed by store-type proportionally to total remuneration of working proprietors in wholesale trade. These data were derived from a special compilation made by the Merchandising Section for this purpose from basic census worksheets. The components of G.D.P. at factor cost were summed, giving a 1951 weighting system for 25 store-types of wholesalers proper, 25 store-types of manufacturers' sales branches, one type of petroleum bulk tank station, and 25 store-types of other wholesalers.</p> <p>The projectors beyond 1951 for individual store-types were the same series as were used for interpolation. Monthly data are available for certain series in the current period and the annual average of monthly data has been adopted since 1956. (See Appendix C).</p>
Wholesalers proper .....	2.871	part 701-729			
Amusement, sporting and photographic goods.	0.023				
Automotive .....	0.262				
Beer, wine and distilled spirits	0.003				
Chemicals .....	0.091				
Coal and coke .....	0.074				
Dry goods and apparel .....	0.173				
Electrical goods .....	0.141				
Farm products (raw materials) ...	0.027				
Farm supplies .....	0.032				
Food products (ex. groceries) and tobacco.	0.264				
Forest products (ex. lumber).....	0.014				
Furniture and house furnishings	0.060				
General merchandise .....	0.105				
Groceries and food specialties....	0.258				

*see revised weights for wholesale trade 67-506*

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Trade - Continued:					
Wholesalers proper - Concluded:					
Hardware .....	0.203				
Jewellery .....	0.020				
Leather and leather goods .....	0.008				
Lumber and building materials (other than metal) .....	0.233				
Machinery, equipment and supplies .....	0.480				
Metals and metal work .....	0.072				
Paper and paper products .....	0.095				
Petroleum and petroleum products .....	--				
Plumbing and heating equipment and supplies .....	0.077				
Waste materials (including scrap metal) .....	0.075				
Other kinds of business .....	0.061				
Other wholesalers (manufacturers' sales branches, agents and brokers, assemblers of primary products, petroleum bulk tank stations and other) .....	2.124	part 701-729			
Amusement, sporting and photographic goods .....	0.004				
Automotive .....	0.077				
Beer, wine and distilled spirits .....	0.010				
Chemicals .....	0.071				
Coal and coke .....	0.004				
Dry goods and apparel .....	0.100				
Electrical goods .....	0.115				
Farm products (raw materials).....	0.288				
Farm supplies .....	0.023				
Food products (ex. groceries) and tobacco .....	0.231				
Forest products (ex. lumber).....	0.008				
Furniture and house furnishings .....	0.016				
General merchandise .....	0.009				
Groceries and food specialties .....	0.107				
Hardware .....	0.010				
Jewellery .....	0.003				
Leather and leather goods .....	0.005				
Lumber and building materials (other than metal) .....	0.104				
Machinery, equipment and supplies .....	0.193				
Metals and metal work .....	0.107				
Paper and paper products .....	0.070				
Petroleum and petroleum products .....	0.467				
Plumbing and heating equipment and supplies .....	0.038				
Waste materials (including scrap metal) .....	--				
Other kinds of business .....	0.064				
Retail trade .....	9.567	731-799	Gross output	1960*	<p>In measuring real domestic product originating in the retail trade industry, deflated current dollar sales by type of store were weighted and combined. Quantity data were not available in this area.</p> <p>In the 1935-47 period sales were deflated with 1941-based price indexes to give 1941 constant dollars. The constant dollar series were then combined with weights based on 1941 expense ratios and the resulting series arithmetically converted to the 1935-39 base.</p> <p>In the 1948-51 period, 1949-based price indexes were used as deflators and the constant dollar store-type series combined with estimated 1949 G.D.P. weights. The two series were linked in 1948 to give a continuous series on the 1949 base.</p>

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Trade - Continued: Retail trade - Continued:					<p>In each of the census years, 1941 and 1951, it was possible to estimate the commodity sales of each individual trade, on a dollar basis, by using the percentage tables computed for each trade from the census returns of firms reporting. Thus it was possible to recombine the commodity detail for any group of stores falling within a major trade. In 1951 detailed commodity sales data by trade were deflated with suitable 1941-based price indexes to give 1951 retail sales in dollars of the year 1941. This project required the exploitation of all relevant price data collected by DBS. In addition, trade catalogue data as well as implied price data from production index bench-mark worksheets were used in order to deflate the available commodity detail. The weighting patterns of the Cost-of-living Index and the Consumer Price Index as well as those of the Wholesale Price Index, Residential Building Materials, Non-residential Building Materials, Farm Products, Materials and Equipment Used by Farmers, Farm Family Living Costs, etc., were studied in order that the best combination of available price indexes could be made for the purpose of deflating each commodity total in each retail trade. This detailed work was necessary in order to obtain a better measure of the volume of output movement between census years. This also permitted a check on the accuracy of the price series used for intercensal deflation as well as the utilization of greater detail in the weighting pattern in order to take proper account of shifts between trades.</p> <p>After the deflation work was completed the detailed sales data were combined using expense ratios as computed using 1941 census data. In order to estimate the missing ratios, salary, wage and working proprietor data for 1941 were utilized. Several adjustments were made to the census data as follows: the removal of restaurants to personal service, the transfer of office, store and school furniture, equipment and supplies to wholesale trade and the incorporation of estimated sales by milk dealers which were not covered by retail trade surveys nor by the Census of Industry.</p> <p>In the 1935-47 period intercensal store-type retail sales data were deflated and combined with 1941 expense ratios. Store-type deflators were constructed by combining available price indexes with 1941 census commodity weights. For certain store-type groups, it was necessary to prepare estimates of retail sales in the intercensal period. These groups included meat stores (1935-40), other food stores (1935-40 and 1942-47), garage and filling station (1935-40) and other automotive group (1935-40 and 1942-47), other apparel (1935-40 and 1942-47), other building material dealers (1935-40 and 1942-47), other furniture, appliance and radio stores (1935-40), farm implement dealers (1935-40 and 1942-47), and beverage stores (1935-40 and 1942-47). The total of these estimated sales and the sales covered in the intercensal revisions was then deducted from total retail sales in order to derive the group "all other trades". In general the sales in the above specified trades were estimated by extrapolating on the basis of a related series. The trend of the extrapolator was modified where necessary in the light of the actual 1941 and 1951 census comparisons.</p> <p>In the 1946-60 period the index of retail trade was computed on a 1949 base. Monthly deflators for the 24 retail trades have been prepared by the Prices Division. These deflators drew on a wide range of price relatives which were combined using weights based on the commodity detail already described. The weighting system for combining the deflated store-type sales was based on estimated gross domestic product. Data for these estimates were obtained from various sources, namely the Taxation Statistics report of the Department of National Revenue, the 1951 Census of Distribution and the Merchandising Section, DBS.</p> <p>Since there was no significant difference between the annual and the monthly indexes in the 1946-49 period, it was decided to adopt the monthly index from 1946 to date.</p>
Grocery and combination stores (chain).	0.233				
Grocery and combination stores (independent).	0.721				
Other food and beverage stores ....	0.556				
General stores .....	0.351				
Department stores .....	1.526				
Variety stores .....	0.298				
Motor vehicle dealers .....	0.850				
Garages and filling stations .....	0.529				
Men's clothing stores .....	0.220				
Family clothing stores .....	0.196				
Women's clothing stores .....	0.230				
Shoe stores .....	0.140				
Hardware stores .....	0.294				
Lumber and building material dealers.	0.362				
Furniture, appliance and radio stores.	0.375				

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Trade - Concluded:					
Retail trade - Concluded:					
Fuel dealers .....	0.160				
Drug stores .....	0.332				
Jewellery stores .....	0.172				
Other stores .....	2.022				
Finance, insurance and real estate....	9.127	802-809			
Banking .....	1.121	802	Labour input	1958	The banking industry includes chartered banks, savings banks, Caisses Populaires, the Bank of Canada and the Foreign Exchange Control Board, clearing houses, note brokers, etc. Owing to the lack of suitable data for measuring output in this area, it was decided to use a primary input measure. Salaries, wages and supplementary labour income were deflated with an index of average weekly wages and salaries in banking, investment and loan.
Life insurance .....	0.679	part 806	Labour input	1958	The life insurance industry includes establishments primarily engaged in issuing, underwriting, selling or administering life insurance policies. Fraternal life insurance organizations are included here. Owing to the lack of data suitable for measuring output in this industry, a labour input measure has been adopted. Salaries, wages and supplementary labour income were deflated with an index of average weekly wages and salaries in insurance.
Non-life insurance .....	0.366	part 808	Labour input	1958	The non-life insurance industry includes establishments primarily engaged in issuing, underwriting, selling or administering insurance policies other than life. This industry includes fire insurance, accident and sickness insurance, automobile insurance, marine insurance, etc. As in life insurance, a labour input measure has been adopted. Salaries, wages and supplementary labour income were deflated with an index of average weekly wages and salaries in insurance.
Insurance and real estate agents and agencies.	0.528	part 806 part 808 part 809	Labour input	1958	This group of industries belongs partly in insurance and partly in real estate, but a separation was not possible. Labour input was adopted as the output measure. Salaries, wages and supplementary labour income and net income of unincorporated business were deflated with an index of average weekly salaries and wages in finance, insurance and real estate.
Rents .....	5.545		Gross output	1958	All paid and imputed rents on residential property as well as commercial rents received by persons and imputed rents on government-owned buildings were included here as a separate group. The gross rent estimates prepared for National Accounts purposes were deflated with suitable price indexes and combined using weights based on the relative contribution of each class to aggregate G.D.P. in the base period. The breakdown of rents by type is as follows: (1) non-farm residential (paid and imputed) including facility; (2) farm residential (paid and imputed); (3) farm non-residential (paid); (4) garage rents (paid and imputed); (5) commercial non-farm rent received by individuals and (6) imputed rent on government-owned buildings.
Other finance .....	0.888	804	Labour input	1958	This industry is composed of the following groups: (1) trust and loan; (2) personal and business credit; (3) investment trust; (4) stock and bond dealers; (5) various government companies. Since data suitable for use as output measures were lacking for this group of industries, a labour input measure has been adopted. Salaries, wages, supplementary labour income and net income of unincorporated business were deflated with an index of average weekly wages and salaries in banking, investment and loan.
Public administration and defence....	4.666	911 and 916-918			Government service is considered non-commercial in nature and as such was measured by labour input. Included in government service are certain services which, according to the Standard Industrial Classification, belong to other industries such as agriculture, forestry and fisheries. These services include experimental farms, forestry patrol, forest nurseries, reforestation, fire inspection, operation of fish hatcheries and fishery protection service.
Federal administration and defence (excluding postal service).	2.612	911 and 916			

See footnote at end of Appendix B.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Public administration and defence— Concluded:					
Defence service (armed forces only)	0.866	part 911	Labour input	1961	<p>Only the armed forces were included here. Other defence services are included in other federal administration. A volume measure based on labour input has been prepared for the armed forces. Using data provided by the Department of National Defence it was possible to adjust for shifts in rank and trade group structure. In the post-war period it was also possible to adjust for risk associated with flying duties and for the active reserves of the three armed forces. Using the data on numbers, in conjunction with base-period rates of pay, it was possible to obtain a weighted numbers series. Pay data utilized for base-period weights include basic pay, subsistence allowances, value of free medical care and, in the case of the lower ranks, an allowance for clothing. No distinction in rates of pay or in statistical treatment was made between married and single or male and female members of the armed forces.</p> <p>In addition to the regular force, it was possible to construct a series for the active reserves for the period from 1947 to date. It was necessary to tie together the activity of active reserves attending local nightly drills, the summer training camp activities of these reserves, retired officers taking special courses or training with the regular forces, cadet instruction, C.O.T.C., U.N.T.D., C.S.C. cadets, R.F.T.P., etc. This was done by estimating the number of days worked in each period, the average rank for pay purposes and then weighting accordingly.</p>
Other federal administration .....	1.746	part 911 and 916	Labour input	1958	<p>A constant dollar labour input series was adopted as the measure in this industry. Salaries, wages and supplementary labour income (excluding certain groups measured elsewhere and including others not measured elsewhere) were deflated with an index of wage-rates. In the 1935-39 based series the index was a special wage-rate index covering selected occupations and the annual number of employed persons in the civil service. In the 1949-based series the deflator was an implicit price index derived partly from moving 1949 values on a volume index based on the number of employees and partly from deflating current values with indexes of average hourly earnings appropriate to casual employees. These were the deflators used in the constant dollar National Expenditure estimates.</p> <p>The groups measured elsewhere include the Canadian Broadcasting Corporation, the armed forces, federal hospitals, Canadian government elevators, Dominion government telegraphs, National Harbours Board, Indian Day schools, and Dominion Post Office. Certain Crown corporations which are not measured elsewhere are included here. These include Defence Construction Limited, Atomic Energy of Canada Limited and Crown Assets Disposal Corporation.</p> <p>In measuring government services Canadians working in Canadian government offices are counted whether located in Canada or not, whereas foreign government employees in Canada are omitted.</p>
Other government administration ....	2.054	917 and 918			
Municipal and other local government administration.	1.008	917	Labour input	1958	Salaries, wages and supplementary labour income were deflated with an implied index of wage-rates. This index of wage-rates based on the earnings of regular and casual employees of provincial government, was obtained from the worksheets of the National Product Section.
Provincial government administration.	1.046	918	Labour input	1960	Salaries, wages and supplementary labour income (excluding highway construction performed by own labour force) were deflated with an index of wage-rates in provincial government. The deflator was an implied index based on earnings of both regular and casual employees, obtained from the worksheets of the National Product Section.
Other government service n.e.c.....		919			Other government service, n.e.c. includes consular service, diplomatic service and legation staffs of foreign governments located in Canada. In measuring domestic product, these activities must be excluded. <sup>10</sup>
Community, recreation, business and personal service.	10.202	901-909; 922-949			
Community service .....	4.199	901-909			
Education .....	1.588	901	Labour input	1961	<p>Education is considered to be a non-commercial industry. Private profit-motivated schools are relatively unimportant and are not treated separately. The measure adopted was constant dollar labour input.</p> <p>Base period salaries and wages were extrapolated on the number of teaching staff. Consideration was given to part-time teachers and a total on a full-time basis was estimated.</p>

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Community, recreation, business and personal service - Continued:					
Health service .....	2.012	903			
Hospitals .....	0.931	part 903	Labour input	1959	All hospitals are considered here to be non-commercial in nature. Some hospitals, however, are profit-motivated but available statistics did not permit a separation. Most large privately-owned hospitals are classified as public hospitals since a major portion of their income is in the form of government grants and they are not primarily profit-motivated. Labour input is the major indicator used but due to the above mix an amount of depreciation has had to be included. A series of weighted labour input (salaries, wages and supplementary labour income) was derived for the period 1952-58 using 1958 wage-rates by class of personnel, as base year weights. This series was extrapolated to 1935 on the number of graduate nurses and other personnel in hospitals and re-based to 1949 constant dollars on the basis of related data. Depreciation per bed in non-government operated hospitals in the base period 1949, was projected on the number of beds to give a constant dollar capital input series. For all government-operated hospitals, such as veteran, mental and tuberculosis, labour input was the measure adopted.
Other health .....	1.081	part 903	Labour input	1958	Salaries, wages and supplementary labour income were deflated with an implied wage-rate index for hospitals. Net income of physicians, surgeons and dentists, was deflated with a price index of doctors' and dentists' fees respectively. An implied price index of doctors' and dentists' fees was used to deflate the net income of other own account workers such as private nurses and chiropractors. Also included in this latter group were some own account workers belonging to S.I.C. industries 906 and 909.
Other community service .....	0.599	904-909			
Religion .....	0.275	904	Labour input	1960	The measure adopted for religion was based on labour input since this industry is non-commercial in nature. Salaries, wages, living allowances and other supplementary labour income were deflated with an index of living costs composed of four of the components of the Consumer Price Index, viz., food, shelter, clothing and household operation.
Other community service n.e.c.....	0.324	906, 909	Labour input	1960	This industry includes art galleries, museums, and public libraries as well as "own accounts" such as the following: artists, inventors, journalists, naturalists, playwrights, poets, free lance reporters and writers. Membership organizations, such as political organizations, Rotary clubs, Kiwanis clubs and other civic, social and fraternal associations as well as welfare institutions and charitable organizations are also classified here. Although some of these groups may be considered to be commercial while others are definitely non-commercial, no such split was attempted in measuring this industry. The entire group was considered as non-commercial. Salaries, wages and supplementary labour income, deflated with an index of average weekly earnings in selected service industries, was used to represent this industry. This measure is deficient in that it excludes net income of unincorporated business which could not be separated from "other health" above.
Recreation service .....	0.471	922-924			
Theatres and theatrical service ....	0.348	922	Gross output	1958	Paid admissions were used for motion picture theatres, community enterprises, itinerant motion picture exhibitors and drive-in theatres. Prior to 1948 community enterprises and itinerant motion picture exhibitors were included with motion picture theatres. Data for drive-in theatres were first collected in 1947. For film exchanges and motion picture production, receipts were deflated with the implied price index of theatre admissions.
Other recreation service .....	0.123	924	Gross output	1951	This industry includes all recreation service except theatres and theatrical service. Data were available in decennial census years only. The measure adopted was deflated receipts in decennial census years interpolated on an index of output in theatres. The deflator used for receipts was the price index of theatre admissions from the Consumer Price Index. Projection beyond 1951 was made on an index of employment in selected service industries since theatre admissions did not seem suitable in this period.
Business service .....	1.260	932-939	Labour input	1958	This group includes accountancy, advertising, engineering and scientific services, labour organizations, trade associations, lawyers, addressing services, adjusting services, public stenographers, commercial art service, etc. Although labour and trade associations are non-commercial in nature the entire group is classified as commercial. Output measures could not be prepared for this group, since, with the exception of advertising agencies in recent years, no data are available except on a decennial basis and then for the most part, for labour input only. As a result a labour input measure was adopted in this area. Salaries, wages and supplementary labour income were deflated with an index of average weekly wages and salaries in finance, insurance and real estate. The base period net income of those engaged in engineering and scientific services and in law was applied to the number practising each year to give a constant dollar series. The net income of accountants, auditors and other business service "own accounts" was deflated with the implied price index of income rates in engineering and scientific services.

## Description of Annual or Bench-mark Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Community, recreation, business and personal service—Continued:					
Personal service .....	4.272	941-949			
Barbering and hairdressing .....	0.352	941	Gross output	1958	The measure adopted was deflated personal expenditure obtained from the National Product Section. In deriving this measure, decennial census receipts of barber shops and beauty parlours in 1941 were extrapolated to 1935 on an index of retail sales. Projection forward from 1951 was made on the basis of population.
Domestic service .....	0.487	942	Labour input	1958	The measure used for domestic service was deflated labour income. Salaries, wages and living allowances were deflated with an index of average hourly earnings in laundries and dry cleaning plants. Domestic service is considered as non-commercial in nature.
Dyeing, cleaning and pressing .....	0.220	943	Net output	1958	For that portion of the dyeing, cleaning and pressing industry covered by an annual survey, a net index was computed by deducting the cost of materials and supplies in constant dollars from receipts in constant dollars.  For the remainder a gross index was computed by deflating estimated receipts. The value of receipts, available in decennial census years, was interpolated on a straight line trend, and projected after 1951 on the gross index of dyeing, cleaning and pressing computed using the annual survey data. The groups covered by census data include (1) distributors or agents for dry cleaners, (2) fur cleaning, repair and storage, (3) cleaning, pressing and repair shops, (4) hat cleaning shops, and (5) rug cleaning and repairing plants. In 1941 it was necessary to estimate groups (4) and (5) to include them here since they had been included in personal and miscellaneous service respectively. Rug cleaning had been included in the annual survey up to and including the year 1949. Thus it was necessary to deduct this item from the survey for the 1935-49 period to prevent duplication. In the portion of the industry covered by the annual survey receipts were deflated with the laundry service component of the Consumer Price Index up to the year 1949 and the dry cleaning service component thereafter.  In the 1935-46 period materials were available in detail. Base period unit values were applied to current period quantities and the constant dollar values summed. Complete coverage was obtained using the assumption that the prices of items not covered moved with the prices of covered items.  Since the detail of materials was not available in the 1947-58 period, the total value of materials was deflated with a price index representing the items included in materials. For this purpose a composite price index of laundry soap, packaged soap, gasoline, detergent and dyeing materials was compiled.
Hotels, motels and lodging houses	1.948	945	Gross output	1958	The first annual survey of hotels on a continuing basis was made in 1949. Prior to that, only 1941 Decennial Census data were available. Receipts by source were interpolated between 1941 and 1949, and extrapolated from 1941 to 1935 on the index of retail sales.  Since 1949, revenue has been reported by source, i.e., receipts from rooms, meals, beverages and "other" which includes cigarettes, tobacco, barbering and hairdressing, newspapers, magazines, etc. Each component of revenue was deflated separately. Receipts from room rental were deflated with an index of rates for hotels and cabins as prepared by the National Product Section. In this index, rates for several types of accommodation are combined to give a composite rate index. Meal receipts up to 1954 were deflated with a composite index of hourly earnings in hotels and restaurants and the food price index component of the Consumer Price Index. After 1954 the Consumer Price Index component "restaurant meals" was used. The deflator for beverage receipts was a composite index of average hourly earnings in hotels and restaurants combined with a price index of alcoholic beverages. The deflator used for "other" receipts was an average of the price indexes of tobacco and men's haircuts. Certain series used in the deflation were not available for the entire period and estimates were necessary. The index of average hourly earnings in hotels and restaurants was available only from 1945 to date. The 1945 index was extrapolated to 1939 on average weekly earnings in selected service industries and from 1939 to 1935 on the index of wage-rates in laundries prepared by the Department of Labour. <sup>11</sup> The weights used for combining the cost of materials and labour were based on the percentage contribution of each to the total cost of goods sold. As these data first became available in 1956, the weights were based on that year, on the assumption that the relationship between cost of material and labour in 1956 would be similar to that in the base periods.  The weighting system for combining the four series of deflated receipts was based on receipts less cost of goods sold in the year 1956. Estimates were necessary for the cost of goods sold. Operating expense percentages based on a sample of hotels (having 100 or more rooms) were applied to receipts by all hotels to give cost of sales including labour. The labour content was then estimated using related data and removed from the cost of goods sold.

See footnote at end of Appendix B.

## Description of Annual or Bench-Mark Indexes - Concluded

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Type of indicator	Latest year	Description of series
Community, recreation, business and personal service—Concluded:					
Hotels, motels and lodging houses—Concluded:					Hotels are included as of 1950. Estimates of revenue were made from data published in the monthly report <i>Canadian Hotel Review and Restaurant</i> . Revenue from motels was combined with revenue from hotels and deflated as described above.  For boarding and lodging houses net income in 1949 was estimated by the National Product Section as 50 percent of gross revenue as reported in the family expenditure survey for that year. Projection to other years was made on an index of restaurant sales. The current dollar series was deflated with a combined price index of rooms and meals in hotels.
Laundries .....	0.175	946	Net output	1958	The annual survey of laundries covers power laundries only and provides data for receipts, cost of materials and supplies used, employment and operating expenses. Data for laundry service by other than power laundries were available for decennial census years only.  A net index was computed for power laundries by deducting the cost of materials and supplies in constant dollars from the value of receipts in constant dollars.  In the 1946-58 period, receipts were available by type of service performed, i.e., laundry, cleaning, coat and towel rental, wholesale laundry and dry cleaning, and "other". Both laundry and cleaning receipts were deflated with their Consumer Price Index counterpart although receipts from cleaning were deflated with the laundry component prior to 1948. Receipts from other service were deflated with the implied price index of laundry and cleaning service.  A breakdown of receipts was not available in the 1935-46 period. Receipts were deflated with the laundry service component of the Consumer Price Index.  In the 1947-58 period, the value of materials and supplies was available in total only, and was deflated with a composite price index of laundry soap, packaged soap, bleach, scouring powder, gasoline and detergent.  In the 1935-46 period, the quantity and value of materials and supplies used were reported in detail. Base-period unit values for each item were multiplied by current year quantities to give constant dollar series.  For laundry service by other than power laundries, receipts as reported in Decennial Census volumes were deflated and the resulting constant dollar series interpolated on the gross index of power laundries. Material inputs were not available in this area.
Restaurants, cafes and taverns.....	0.870	947	Gross output	1960	Restaurants and cafes are covered by the retail trade survey and current dollar sales data were available historically. Sales have been deflated with a composite index of average hourly earnings in hotels and restaurants and the food price index component of the Consumer Price Index. After 1954 the Consumer Price Index component "restaurant meals" was used.  Taverns, night clubs, cabarets, etc., are also part of this industry according to the Standard Industrial Classification. Part of this group, taverns, was covered in the "all other trades" component of retail trade.
Undertaking .....	0.063	948	Gross output	1958	The only data available in this industry were receipts and employment which were collected in decennial census years. A special survey was made in 1956 but the coverage was not complete. Receipts in 1941 and 1951 were deflated with the Consumer Price Index and interpolation was made on the number of registered deaths. Extrapolation from 1941 to 1935 and projection beyond 1951 were made on the number of registered deaths.
Photography .....	0.157	944	Labour force	1951	This group of service establishments covers shoe shine parlours, window cleaning service, turkish baths, photography, etc. The Decennial Census was the only source of data in this area. Since suitable deflators were not available for deflating receipts for a detailed breakdown of industries, it was decided to use the number of gainfully occupied persons as reported in decennial census years, interpolating on a straight line trend and projecting beyond 1951 on the index of employment in laundries and dry cleaning.
Other personal service n.e.c. ....		949			

<sup>1</sup> Standard Industrial Classification Manual, DBS, 1948.<sup>2</sup> Trade Journal of Canadian Farm Implements, February and April, 1951.<sup>3</sup> Nebraska Test Bulletin 1950, University of Nebraska.<sup>4</sup> Income Parity for Agriculture, Part II—Expenses of Agricultural Production, October, 1940, United States Department of Agriculture.<sup>5</sup> For latest bench-mark year see Reference Paper, Revised Index of Industrial Production, DBS, Catalogue No. 61-502. For purposes of this publication, these bench-marks have not been revised nor updated.<sup>6</sup> Included in this group for comparability with earlier years.<sup>7</sup> Waybill Analysis, 1949, Board of Transport Commissioners for Canada.<sup>8</sup> Warehousing was included with truck transportation in the 1935-45 period.<sup>9</sup> Annual Report, Lake Carriers' Association, United States of America.<sup>10</sup> Not final; see Appendix C for method used and store-type detail available.<sup>11</sup> See section on Concept of Production, Part III, paragraph 5.<sup>12</sup> Wage Rates, Salaries and Hours of Labour, Department of Labour, Ottawa.



## APPENDIX C

### DESCRIPTION OF QUARTERLY INDEXES



APPENDIX C

Description of Quarterly Indexes

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Description of series	Calendar variation adjustment	Frequency and source of data
Gross Domestic Product .....	100.000				
Goods-producing industries .....	53.080				
Agriculture .....	10.714	000-079	This industry's output was measured using farmers' sales of farm products adjusted for changes in farm-held stocks of grain and livestock plus an estimate of farm products consumed by the farmers. Since farm sales of major grains to the Canadian Wheat Board do not reflect final prices received by farmers (only initial payments), the additional net mark-up on these grains was added to the quarter in which the C.W.B. sold the grain for consumption or export.		
Marketings .....			Farmers' marketings of oats, barley, rye and flax, in bushels, were valued at base year initial prices. Wheat sales were deflated with a price index based on Canadian Wheat Board daily fixed cash quotations. The value of other hay and grain marketings was deflated with an implied price index based on the five major grains. Pounds of milk or milk equivalent of farm-produced dairy products and dozens of eggs were valued at base year unit prices.	6	Monthly - DBS Agriculture Division Farm Finance Section
			Cattle, calves, sheep, lambs and hogs sold, were valued at average base year unit prices per hundredweight.	5	
			Hundredweight of potatoes marketed were valued using base year prices. The value of farm sales for other farm products such as tobacco, vegetables, sugar beets, fruits, wool, honey, maple products, forest products, fur farm products and miscellaneous other farm products was deflated with appropriate price indexes.	2	Monthly - DBS Prices Division Wholesale Prices Section
Changes in inventories .....			Changes in the number of cattle, calves, sheep, lambs, hogs, chickens and turkeys held on farms were valued using average "herd" or "flock" prices per unit in the base year. Changes in the number of bushels of oats, barley, rye and flax held on farms were valued using average initial unit prices in the base year. Wheat inventory changes in bushels were valued at the price per bushel implicit in the deflated value of wheat sales in the quarter. New wheat crop inventory additions in the third quarter of each year were valued separately in order to reflect crop quality.	1	Quarterly - DBS Agriculture Division Farm Finance Section
Income in kind .....			The estimated values of milk, butter, cheese, poultry, eggs, meat, fruits, vegetables, potatoes, honey, maple products, forest products and wool consumed or used by farmers, their families and hired help were deflated with appropriate price indexes.	2	Quarterly - DBS National Accounts and Balance of Payments Division National Product Section
Net mark-up on Canadian Wheat Board sales.			Bushels of wheat, oats and barley sold by the Canadian Wheat Board were valued at the difference between final and initial prices received by farmers in the base year.	2	Quarterly - DBS National Accounts and Balance of Payments Division National Product Section
Forestry .....	2.108	080-089	Cords of pulpwood cut and logs cut for domestic sawmill consumption (represented by sawn lumber and shingles) were weighted with average unit prices in the base year. Exports of railroad ties, telegraph and telephone poles and pit props, weighted with their respective prices per unit in the base period, were also added.	6	Monthly - DBS Industry and Merchandising Division Primary Industries Section
Fishing and trapping .....	0.540	091-097			Monthly - DBS External Trade Division
Fishing .....	0.457	091-095	Pounds of some 40 species of sea and inland fish landed were weighted and combined using base period average unit landed prices.	7	Monthly - DBS Industry and Merchandising Division Primary Industries Section
Trapping .....	0.083	097	The numbers of wildlife pelts (25 types) taken during the trapping season were weighted using individual base year average prices per pelt. This annual aggregate was then divided equally between the first quarter of the current calendar year and the fourth quarter of the previous year.	2	Annual - DBS Agriculture Division Livestock and Animal Products Section
Mining (excluding contract drilling other than oil and gas).	3.245	101-117 part 119 121-159	Indexes used here were those incorporated in the Index of Industrial Production. For details see Appendix B, Page 53 of the <i>Revised Index of Industrial Production, 1935-1957</i> . To update the series therein, see Catalogue No. 61-005 (Monthly).		Monthly - DBS National Accounts and Balance of Payments Division Industrial Output Section
Manufacturing (excluding repair service).	27.340	2-3	Indexes used here were those incorporated in the Index of Industrial Production. For details see Appendix B, page 53 of the <i>Revised Index of Industrial Production, 1935-1957</i> . To update the series therein, see Catalogue No. 61-005 (Monthly).		Monthly - DBS National Accounts and Balance of Payments Division Industrial Output Section

See footnotes at end of Appendix C.

## Description of Quarterly Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Description of series	Calendar variation adjustment	Frequency and source of data
Construction .....	6.379	404-439	Public and private investment in new construction was deflated with appropriate deflators and adjusted for repair construction done on a contract basis.	<sup>1</sup>	Quarterly - DBS National Accounts and Balance of Payments Division National Product Section
Electric power and gas utilities .....	1.646	602-604	Indexes used here were those incorporated in the Index of Industrial Production. For details see Appendix B, page 53 of the <i>Revised Index of Industrial Production, 1935-1957</i> . To update the series therein, see Catalogue No. 61-005 (Monthly).		Monthly - DBS National Accounts and Balance of Payments Division Industrial Output Section
Other goods industries n.e.c. ....	1.108				
Manufacturing repair service .....	0.819	See appendix B	An interpolation between annual bench-marks was used.	<sup>2,3</sup>	Annual - DBS National Accounts and Balance of Payments Division Industrial Output Section
Contract drilling (excluding drilling for oil and gas).	0.045	part 119	An interpolation between annual bench-marks was used.	<sup>2,3</sup>	
Municipal waterworks .....	0.244	part 608	An interpolation between annual bench-marks was used.	<sup>2,3</sup>	
Service-producing industries .....	46.920				
Transportation, storage and communication.	8.363	501-549 and 914			
Transportation .....	6.528	501-519			
Air transport and airports .....	0.150	501	Domestic and international services of Canadian air carriers were used to measure the output of this industry by weighting together the following components:		Monthly - DBS Public Finance and Transportation Division Transportation Section
			Unit-toll passenger service was measured by the deflation of passenger revenue with the "plane fare" component of the Consumer Price Index.	<sup>7</sup>	
			Other unit-toll services, namely mail and goods transportation were measured using mail and goods ton-miles weighted with base year unit prices.	<sup>7</sup>	
			Other transportation revenues were deflated using a price index based on rates per hour charged by carriers doing bulk transportation.	<sup>7</sup>	Occasional - Air Transport Board Tariff Interpretation Section
Passenger transport (inter-urban).	0.260	505	Total revenue was deflated with the Consumer Price Index component for bus fares.	<sup>7</sup>	Monthly - DBS Public Finance and Transportation Division Transportation Section
Railway transport (including express).	3.594	508	Passenger-miles and freight ton-miles were weighted with average unit revenue in the base year. Other revenues such as those from mail, express, switching, milk, highway transport etc. were deflated with appropriate price indexes.	<sup>7</sup>	Monthly - DBS Public Finance and Transportation Division Transportation Section
Passenger transport (urban and suburban).	0.555	510	Total revenue from regular or zone fares was deflated with the Consumer Price Index component for street car and bus fares.	<sup>7</sup>	Monthly - DBS Public Finance and Transportation Division Transportation Section
Taxicab service .....	0.407	512	Consumer expenditure on taxicabs was deflated with the Consumer Price Index component for taxi fares.	<sup>1</sup>	Monthly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Truck transport .....	0.497	514	Employment index centred for mid-month. <sup>4</sup>	<sup>1</sup>	Monthly - DBS Labour Division Employment Section
Water transport .....	0.802	516	Tons handled by Canadian registered ships was the measure used for shipping in Great Lakes and ocean traffic, while tons unloaded were used for coastwise service. These components were combined using weights based on unpublished data for salaries, wages, income in kind, profits, and depreciation in 1949.	<sup>7</sup>	Monthly - DBS Public Finance and Transportation Division Transportation Section
Stevedoring .....	0.227	part 518	Wages paid to stevedores were deflated with an index based on wage-rates within the industry.	<sup>1</sup>	Monthly - DBS. Labour Division Employment Section

See footnotes at end of Appendix C.

## Description of Quarterly Indexes - Concluded

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Description of series	Calendar variation adjustment	Frequency and source of data
Transportation, storage and communication - Concluded:					
International bridges, tunnels and ferries.	0.028	part 519	An interpolation between annual bench-marks was used.	2,3	Annual - DBS National Accounts and Balance of Payments Division Industrial Output Section
Pipelines.....	0.008	part 519			
Oil pipelines.....			Trunk line barrel-miles adjusted for output of gathering lines were used to measure production.	7	Monthly - DBS Public Finance and Transportation Division Public Utilities Section
Gas pipelines.....			The measure of production used in the gas pipelines industry was Mcf. miles.	7	
Storage.....	0.230	524-527			
Grain elevators.....	0.186	524	Average weekly receipts, shipments and storage of grains by elevators were combined using base period average charges.	1	Monthly - DBS Agriculture Division Crops Section
Storage and warehousing.....	0.044	527	The published employment index for this industry, centred for mid-month, was used. <sup>4</sup>	1	Monthly - DBS Labour Division Employment Section
Communication.....	1.605	543-549 and 914			
Radio and television broadcasting	0.174	543	The published employment index centred for mid-month was used. <sup>4</sup>	1	Monthly - DBS Labour Division Employment Section
Telephone.....	0.805	547	The net sales by telephone companies were deflated with the Consumer Price Index component for telephones.	7	Quarterly - DBS Business Finance Division Operations Section
Telegraph and cable.....	0.186	549	Current communication revenue was deflated with a wage-rate index for that industry.	7	Monthly - DBS Public Finance and Transportation Division Transportation Section
Postal service.....	0.440	914	Postal revenue was deflated with an index based on mail rates.	6	Monthly - DBS Public Finance and Transportation Division Public Finance Section
Trade.....	14.562	701-799			
Wholesale.....	4.995	701-729	Total wholesale trade was obtained by combining wholesalers proper and other wholesalers, using their respective contributions to gross domestic product in the base period as weights.		
Wholesalers proper.....	2.871	part 701-729	Starting in 1955 the following statistics on sales for 18 store-types of wholesalers proper were available: fresh fruits and vegetables; groceries and food specialties; meat and dairy products; clothing and furnishing; footwear; other textile and clothing accessories; coal and coke; drugs and drug sundries; newsprint, paper and paper products; tobacco, confectionery and soft drinks; automotive parts and accessories; commercial, institutional and service equipment and supplies; construction materials and supplies including lumber; farm machinery; hardware; household electrical appliances; industrial and transportation equipment and supplies; and all other trades.  The sales for each trade were deflated with an appropriate store-type deflator and combined using estimated contributions to base year gross domestic product at factor cost. These results were then linked at the group level to a similar computation done for the period from 1946-55 for a 9-store breakdown available in index form.	5	Monthly - DBS Industry and Merchandising Division Merchandising Section  Monthly - DBS Prices Division Retail, Wholesale and Farm Prices Sections
Other wholesalers.....	2.124	part 701-729	As of 1956, the volume of output for this group of wholesalers (comprising agents and brokers, petroleum bulk tank stations, assemblers of primary products, manufacturers' sales branches with and without stocks and other miscellaneous wholesalers) was represented by two of the above bracketed components: petroleum bulk tank stations and manufacturers' sales branches. Deflation of manufacturers' sales branches was done at the industry level and aggregated into 13 groups of industries which were combined using salaries and wages obtained from 1951 decennial census data. Deflated sales for petroleum bulk tank stations were measured separately. Gross domestic product at factor cost weights were then used to combine these 2 groups of wholesalers.	5	Monthly - DBS Industry and Merchandising Division Inventories Section  Monthly - DBS Prices Division Wholesale Prices Section

See footnotes at end of appendix C.

## Description of Quarterly Indexes - Continued

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Description of series	Calendar variation adjustment	Frequency and source of data
Trade - Concluded:					
Retail .....	9.567	731-799	Retail sales were broken down by type of retail outlet, namely: garages and filling stations; drug stores;	7 <sup>s</sup>	Monthly - DBS Industry and Merchandising Division Merchandising Section
			grocery and combination stores (chain); grocery and combination stores (independent); other food and beverage stores (less liquor and beer); general stores; department stores; variety stores; motor vehicle dealers; men's clothing stores; family clothing stores; women's clothing stores; shoe stores; hardware stores; lumber and building material dealers; furniture, appliance and radio stores; fuel dealers; jewellery stores; used car dealers; farm implement dealers; farm feed stores; government liquor stores; brewers' retail stores; and miscellaneous trades. The sales for each of these 24 stores were adjusted currently for "births" and "deaths" of stores when necessary and then deflated with special base-weighted deflators and combined using estimated contribution to base year gross domestic product at factor cost as derived from operating results surveys supplemented by taxation statistics and 1951 census of distribution data.	6 <sup>s</sup>	Monthly - DBS Prices Division Retail Prices Section
Finance, insurance and real estate					
Rents .....	5.545		Deflated gross rents (paid and imputed) received by persons plus deflated gross imputed rents on government buildings were combined using base period contribution to gross domestic product at factor cost as weights.	2	Quarterly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Other finance, insurance and real estate.	3.582	802-809	Salaries and wages paid in finance, insurance and real estate, plus the net income of unincorporated business were deflated with an index of average weekly earnings in the industry.	2	Monthly - DBS (Salaries and wages only) Labour Division Central Staff  Quarterly - DBS (Net income of unincorporated business only) National Accounts and Balance of Payments Division National Product Section
Public administration and defence...					
Federal administration and defence (excluding postal service).	2.612	911 and 916			
Defence service (armed forces only).	0.866	part 911	Numbers in regular armed forces by ranks weighted with base year average pay, including allowances.	2	Monthly - National Defence
Other federal administration .....	1.746	916 and part 911	Deflated salaries, wages and supplementary labour income received by employees in the federal service.	2	Monthly - DBS Labour Division Central Staff
Other government administration ....					
Municipal and other local government administration.	1.008	917	Labour income of municipal employees (less waterworks and hospitals) deflated with an index based on wage-rates of full-time provincial employees.	2	Monthly - DBS Labour Division Central Staff
Provincial government administration.	1.046	918	Estimate of full-time employment exclusive of hospitals and schools.	2	Monthly - DBS Public Finance and Transportation Division Government Employment and Payrolls Section
Community, recreation, business and personal service.					
Community service .....	4.199	901-909			
Education .....	1.588	901	An interpolation between annual bench-marks was used.	2,3	Annual - DBS National Accounts and Balance of Payments Division Industrial Output Section

See footnotes at end of Appendix C.

## Description of Quarterly Indexes - Concluded

Industry title	Industry weights 1949	S.I.C. <sup>1</sup> No.	Description of series	Calendar variation adjustment	Frequency and source of data
Community, recreation, business and personal service - Concluded:					
Health service .....	2.012	903			
Hospitals .....	0.931	part 903	An interpolation between annual bench-marks was used.	<sup>2,3</sup>	Annual - DBS National Accounts and Balance of Payments Division Industrial Output Section
Other health .....	1.081	part 903	Consumer expenditure on other health services was deflated with the Consumer Price Index component for doctors' fees.	<sup>2</sup>	Monthly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Other community service .....	0.599	904-909	An interpolation between annual bench-marks was used.	<sup>2,3</sup>	Annual - DBS National Accounts and Balance of Payments Division Industrial Output Section
Recreation service .....	0.471	922-924	Consumer expenditure on recreation was deflated with the Consumer Price Index component for theatre admissions.	<sup>7</sup>	Monthly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Business service .....	1.260	932-939	Salaries, wages and net income of unincorporated business were deflated with an index based on wage-rates in the finance, insurance and real estate industries.	<sup>2</sup>	Monthly - DBS (Salaries and wages only) Labour Division Central Staff  Quarterly - DBS (net income of unincorporated business only) National Accounts and Balance of Payments Division National Product Section
Personal service .....	4.272	941-949			
Domestic service .....	0.487	942	Consumer expenditure on domestic service was deflated with the Consumer Price Index component for household help.	<sup>2</sup>	Monthly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Dyeing, cleaning, pressing and laundries.	0.395	943 and 946	The employment index was centred for mid-month. <sup>4</sup>	<sup>2</sup>	Monthly - DBS Labour Division Employment Section
Hotels, motels and lodging houses	1.948	945	Indexes for both hotels and lodging houses were based on consumer expenditure data. The value of hotel service was deflated with a special price index based on hotel and cabin rates. Lodging expenditure was deflated with a combined food and shelter price index. A special adjustment was made at the total level to reflect trends in motel service.	<sup>7</sup>	Monthly - DBS National Accounts and Balance of Payments Division National Expenditure Section
Restaurants, cafes and taverns .....	0.870	947	The restaurant component of the retail sales survey (adjusted currently for "births" and "deaths" of stores) was deflated with a specially constructed price index.	<sup>7</sup>	Monthly - DBS Industry and Merchandising Division Merchandising Section
Barbering and hairdressing .....	0.352	941	The index was based on current population estimates.	<sup>2</sup>	Quarterly - DBS Census Division Census Analysis Section
Undertaking .....	0.063	948	The index was based on the number of deaths.	<sup>7</sup>	Monthly - DBS Health and Welfare Division Vital Statistics Section
Miscellaneous personal service .....	0.157	944 and 949	The index was based on retail trade estimates.	<sup>2</sup>	Monthly - DBS National Accounts and Balance of Payments Division Industrial Output Section

<sup>1</sup> Standard Industrial Classification Manual, DBS, 1948<sup>2</sup> No calendar variation adjustment was required for this component as the basic data were in a rate-adjusted form at source.<sup>3</sup> In order to obtain quarterly indexes where these did not exist as such, the annual indexes were spread monthly using the technique referred to in paragraphs 93-95. These monthly indexes were then simply averaged to yield quarterly levels. The interpolation was accomplished by submitting to the computer an artificial monthly index devoid of trend, cycle, seasonal and irregular components (i.e., an observation of 100.0 for each month of each year in the period covered), along with the annual bench-marks. The resultant series, representing trend-cycle movements, were used in both the seasonally unadjusted and adjusted industry indexes.<sup>4</sup> In those industries in which output is represented by employment, the end-of-month data are subjected to a two-month moving average to make the results more indicative of the entire month.<sup>5</sup> When adjusting for calendar variation in this industry the relative importance of individual shopping days is taken into account in order to more accurately reflect the rate of output between months and quarters.



## APPENDIX D

PROBLEMS IN THE RECONCILIATION OF REAL GROSS DOMESTIC PRODUCT  
AT FACTOR COST WITH CONSTANT DOLLAR EXPENDITURE ON GROSS  
NATIONAL PRODUCT AT MARKET PRICES



## APPENDIX D

### Problems in the Reconciliation of Real Gross Domestic Product at Factor Cost with Constant Dollar Expenditure on Gross National Product at Market Prices

#### Introduction

Gross National Product at market prices, the concept of production central to the Canadian National Accounts, measures "the market value of unduplicated goods and services produced in a given period—within the boundaries of production as defined—by Canadian residents".<sup>1</sup> As implied in the preceding definition, the basis of valuation is a system of prices which will include indirect taxes less subsidies, while the boundaries of production are drawn so as to measure production of Canadian residents. A second concept of production, Gross Domestic Product at factor cost, is also published in the Canadian system of accounts. This aggregate differs from the first in two respects. First, it measures production occurring mainly within the geographic boundaries of Canada,<sup>2</sup> second, the production so measured is valued at factor cost.

Table IV of the National Accounts,<sup>3</sup> provides a reconciliation between these two aggregates, and it is repeated below, for the year 1949, in order to clarify the differences already mentioned.

<sup>1</sup> *National Accounts, Income and Expenditure, 1926-1956*, DBS Part II, Para. 34.

<sup>2</sup> The United Nations Statistical Commission in its *Survey of National Accounting Practices*, E/CN.3/291, 12th February, 1962, distinguishes in Part II of this report between the "territorial, domestic and national concepts". The "domestic" concept includes in its measure of production pay and allowances of armed services and consular services stationed abroad, but excludes such pay and allowances of the personnel of foreign governments stationed in the given country, while the "territorial" concept reverses these entries. (The Canadian "domestic" concept follows the practice outlined above, and also, as recommended by the U.N., includes in its measure of production incomes of ships and aircraft operating abroad.) This same report, in its summary table of country practices, indicates four main product concepts: "territorial, domestic, national and geographic", but the distinction between "territorial and geographic" is not clear.

<sup>3</sup> *A Standardized System of National Accounts, 1958 edition—O.E.C.D.*, distinguishes only between the "domestic and national" concepts and in a manner similar to that of the U.N.

<sup>4</sup> *op. cit.*

Both production concepts have their uses, although the valuation differences<sup>4</sup> have been explored more fully in the literature than have the boundary differences. The justification for market prices is that the allocation of demand as between various goods and services is, in part, a function of their prices. Similarly, studies of resource allocation as between industries are more useful if only the costs of the various factors are measured.<sup>5</sup>

An exact parallel to these two approaches to the measurement of production may be found in the measurement of economic production in constant prices. Constant dollar expenditure on Gross National Product at market prices, apart from the fact that production is valued in terms of the prices of some base period, is conceptually identical to its current value equivalent, while real Gross Domestic Product at factor cost also has its current price equivalent.

As has been indicated, the two constant dollar production estimates are closely related, therefore it should be possible to produce a balancing set of industry and expenditure accounts in real terms. The recent United Nations survey of national accounting practices<sup>6</sup> summarizes in tabular form constant price estimates by country. Of the seventy-seven reporting countries, eighteen produce constant price estimates using both the industry and the expenditure approaches. Of these eighteen countries, four use market price valuations for both estimates, thirteen use a factor cost valuation for the industry estimates and a market price valuation for the expenditure estimates while one country, the United

<sup>4</sup> For a discussion of factor cost versus market price valuation see paragraph 8-10 of this report, also J.L. Nicholson, "National Income at Factor Cost or Market Price?" *Economic Journal* Vol. LXV, and various comments contained in *A Critique of the United States Income and Product Accounts*, Studies in Income and Wealth, Volume Twenty Two.

<sup>5</sup> This discussion is in terms of current price data. Given that prices, whether they be market or factor, are important determinants in the allocation of demand, it therefore would be of dubious value to use constant dollar data for purposes of structural analysis.

<sup>6</sup> *op. cit.*

**TABLE I. Relation Between Gross National Product at Market Prices and  
Gross Domestic Product at Factor Cost**

	1949
	millions of dollars
Gross National Product at market prices .....	16,343
Deduct: Residual error of estimate .....	- (-) 43
Indirect taxes less subsidies .....	- 1,808
Income received from non-residents .....	- 83
Add: Income paid to non-residents .....	390
Gross Domestic Product at factor cost .....	14,885

Kingdom, reconciles the two by preparing its expenditure estimates on the basis of both factor cost and market price valuations.<sup>7</sup> (Its industry estimates are on a factor cost basis.)

The reasons for preferring a factor cost valuation for the industry estimates and a market price valuation for the expenditure estimates have already been mentioned in the preceding discussion of the value estimates. Given that it is desirable to employ the two different valuations, it would also be desirable to be able to reconcile the two estimates simply in order to check the statistical accuracy of the results. Such a reconciliation was attempted, and the following will outline the methods used in converting constant dollar expenditure on Gross National Product at market prices to real Gross Domestic Product at factor cost.

#### Adjustments Required to Convert Constant Dollar Expenditure on Gross National Product at Market Prices to Real Gross Domestic Product at Factor Cost.

In its simplest terms, real Gross Domestic Product at factor cost measures constant dollar gross product originating by industry, which may be defined as constant dollar factor payments inclusive of capital consumption allowances. The addition of indirect taxes<sup>8</sup> to such factor payments would distort the concept of product being measured, for in no way can indirect taxes be considered to be a factor payment. On the other hand, the deletion of indirect taxes from the expenditure aggregate is somewhat more meaningful, in that expenditure may be considered in terms of purchases plus the payment of tax on the goods purchased. For these reasons, together with other problems connected with the allocation of indirect taxes to industries, it was decided that constant dollar expenditure on Gross National Product at market prices should be adjusted to a real Gross Domestic Product at factor cost basis.

The adjustments required to convert constant dollar expenditure on Gross National Product at market prices to a real Gross Domestic Product at factor cost basis are identical with those of the value estimates, an example of which has been given in Table I. The adjustment from a national to a domestic basis is relatively simple to obtain, for constant price estimates of income receipts from, and income payments to non-residents are explicit entries in obtaining the estimates for constant dollar expenditure on Gross National Product at market prices. (In this connection it should be

noted that the deflation of these income flows is not subject to a unique solution, and, because the data on a domestic basis exclude these constant price estimates, these results are probably more accurate than are the estimates on a national basis.) However, complex techniques are required in order to obtain estimates of constant dollar indirect taxes less subsidies, with the result that the adjustment from a market to a factor cost basis of valuation is difficult to estimate even in approximate terms.

The term "constant dollar indirect taxes" has a rather specific meaning. In any year it measures what the value of indirect taxes would have been, had the production of the current period been produced at the prices prevailing in the base period, and had it been taxed at the tax rates of the base period. With reference to the constant price indirect tax adjustment, the United Kingdom notes, "While this series is shown as a necessary step in arriving at the estimates at constant factor cost, it does not necessarily imply that it is, in itself, of economic significance."<sup>9</sup>

In order to anticipate the probable effects of the indirect tax adjustment, it is of some use to consider both real Gross Domestic Product at factor cost and real Gross Domestic Product at market prices in index number form. Both may be expressed as weighted quantity indexes, where the weights are prices. In the case of real Gross Domestic Product at factor cost the price weights are factor costs, that is the prices that are paid in the market to the factors of production; while in the case of real Gross Domestic Product at market prices, the price weights are market prices, that is the prices that are paid in the market by final purchasers of goods and services. The deduction of constant dollar indirect taxes from real Gross Domestic Product at market prices, in effect, simply changes the weighting system of the index. Thus, those products that are highly taxed, e.g., tobacco and alcohol, will receive a relatively larger weight in a market price weighting system than they would in a factor cost weighting system. Given that this is the essential difference one would expect substantial differences between the movement of real Gross Domestic Product at factor cost and real Gross Domestic Product at market prices to occur only if two factors were present:

- (1) If there were a substantial difference in the range of taxes in the base period, i.e., if some important commodities had virtually no tax and others had a large tax and,
- (2) If there were substantial shifts from period to period between expenditures on "no tax" and "high tax" items.

Unless these two factors are present the indexes of real Gross Domestic Product at market prices and real Gross Domestic Product at factor cost should move closely together. It is probable that, on balance, such shifts are not present to an extent sufficient to have a marked effect on

<sup>7</sup> Problems in the conversion of the United Kingdom's estimates of constant price expenditure on Gross National Product at market prices from a market price to a factor cost basis are somewhat simplified by the fact that Gross National Product at market prices is measured excluding the amounts paid in customs duty on imports. (See Tables 11 and 13, *National Income and Expenditure, 1962*, Central Statistical Office, London.)

<sup>8</sup> The term "indirect taxes", should now be taken as meaning "indirect taxes less subsidies".

<sup>9</sup> *op. cit.*, footnote 1, page 73.

the index of real Gross Domestic Product. An examination of the results, for both the Canadian and the United Kingdom data, substantiates this proposition.

Because the procedures followed in obtaining estimates of constant dollar indirect taxes were so complex, the question will be raised as to why some simple adjustment, such as aggregate indirect taxes, deflated with an index of tax rates, could not be attempted. Even apart from such complex problems as determining tax rates in the case of real property taxes, which vary both with mill rates and with assessed values, such a series would not provide us with the required answer. This is because

a simple index of tax rates will not yield the price index required to deflate indirect taxes. For example, taxes vary both because of changes in rates and because of changes in price. To remove indirect taxes from a constant dollar series, what is required is base period tax rates applied to current period quantities, valued in the prices of the base period.

In the following example, the price of the radio is allowed to change while the tax rate is held constant. The correct price index for deflation of indirect taxes is that shown in line 9. A comparison between that and the simple index of tax rates, shown in line 10, indicates why direct deflation of current dollar indirect taxes with a simple index of tax rates will not provide the required result.

**TABLE II. An Illustration of the Price Index Required for the Deflation of Ad valorem Indirect Taxes.**

	Year 1	Year 2
Price of radio, excluding tax .....	\$ 100	130
Ad valorem tax rate .....	% 10	10
Price of radio, including tax .....	\$ 110	143
Price index at retail, excluding tax .....	100	130
Price index at retail, including tax .....	100	130
Number of radios sold .....	100	200
<b>Excluding tax</b>		
1. Value of radios sold (current dollars) .....	\$ 10,000	26,000
2. (price index) .....	100	130
3. (constant dollars) .....	\$ 10,000	20,000
<b>Including tax</b>		
4. Value of radios sold (current dollars) .....	\$ 11,000	28,600
5. (price index) .....	100	130
6. (constant dollars) .....	\$ 11,000	22,000
7. Tax collected (4)-(1) (current dollars) .....	1,000	2,600
8. (6)-(3) (constant dollars) .....	1,000	2,000
9. Implicit price index .....	100	130
10. Tax rate (Year 1 = 100) .....	100	100

### The Derivation of Constant Dollar Indirect Taxes

For the Canadian accounts, the allocation of indirect taxes to the expenditure components is complicated by the fact that only a small portion of the total of such taxes is levied at the point where the transaction constitutes a sale to a final purchaser. For example, federal sales taxes are, for the most part, levied on the manufacturer. Some of the provinces and municipalities have a retail sales tax but these are only a small portion of total indirect taxes. Because of the complexity of the problem it was decided that only through the use

of inter-industry analyses could estimates of constant dollar indirect taxes be made. In deriving the estimates of indirect taxes, extensive use was made of work sheets underlying the allocation of final demand to industry of origin for the year 1956,<sup>10</sup> and of the 1949 inter-industry table.<sup>11</sup>

<sup>10</sup> As contained in "An Inter-industry Analysis of Canadian Foreign Trade, 1949-1958", T.I. Matuszewski, Paul R. Pitts, and John A. Sawyer; a paper presented to the Canadian Political Science Association's Conference on Statistics, June, 1961.

<sup>11</sup> *Supplement to the Inter-industry Flow of Goods and Services, Canada, 1949*, DBS, Catalogue No. 13-513.

In order to use the inter-industry table for such analyses the expenditure components had to be valued in terms of the period for which the table was prepared, i.e., 1949.<sup>12</sup> The expenditure components thus used were those underlying Table 5, of *National Accounts, Income and Expenditure, 1960*, because these estimates were on a 1949 time and weight base (the weight base for the expenditure estimates was revised to 1957 following the publication of the above report). For each of the years 1950 to 1959 inclusive, estimates of constant dollar indirect taxes were obtained using the 1949 constant dollar components of expenditure on Gross National Product at market prices.

The inter-industry table distinguishes between two types of indirect taxes. The first, designated as "direct indirect", applies to all taxes levied on products after the final stage of physical production; in 1949 these amounted to approximately 60% of all indirect taxes, and appear as one of the components of final output. The second, designated as "indirect indirect" applies to indirect taxes levied before the final stage of physical production. In 1949, these amounted to approximately 40% of the total, and are shown as part of total input. The derivation of these two types of taxes will be discussed in the following two sections.

An inter-industry table is a depiction of the production techniques used in the economy in the year of the table's construction. Such a table shows the destination of the output of each industry as well as the costs associated with the production of these outputs. In indicating the flows of goods and services as between industries, and to final demand, the table delineates inter-industry relations and industry interdependency. Although the Canadian table was regarded primarily as a device for statistical integration, it also is a useful analytical tool. This table, together with various supplementary tables, formed the basis for deleting indirect taxes from expenditure on Gross Domestic Product at market prices.

#### Step 1: The Derivation of Direct Indirect Taxes

The first step consisted of allocating each of the components of final demand back to their industries of origin. The components of each of personal expenditure, government expenditure, gross fixed capital formation, change in inventories and exports, were so allocated at a fairly fine level of detail, in order that the proportionality assumptions would be minimized. If total personal expenditure for, say, the year 1957 had been directly allocated, without regard to the changing composition of its

components, the assumption implicit in this would have been that the structure of final personal demand in the year 1957 was identical with that of the year 1949.

Any component of final expenditure, for example, personal expenditure on new cars, consists of expenditure on both imported and domestically produced goods. Because of the relative variability of the import content, the import-domestic proportions prevailing in 1949 could not be used. For this reason, the direct import content for each component had to be determined by means of Trade of Canada data for each of the ten years. After deflating such imports with appropriate price indexes based on 1949=100, adjustments were then made for foreign and domestic transportation, trade margins, and excise taxes and duties. Deduction of imported goods valued in purchasers' prices from each component, for example, personal expenditure on new cars, yielded a residual which, in terms of this example, was equivalent to personal expenditure on domestically produced cars.<sup>13</sup>

This residual valued expenditures in terms of purchasers' prices and at market prices. The proportionality assumptions implicit in the worksheets of the 1949 table were then used to adjust for indirect taxes, and to allocate the remainder back to industry of origin, valued in producers' prices.

In summary, the allocation of final demand to industries of origin yielded the following:

1. Value of direct imports.
2. Direct indirect taxes on imported goods.
3. Direct indirect taxes on domestically produced goods.
4. Value of output at producers' prices, by industry of origin.

This procedure was followed for the sub-components of all the major G.N.E. components. Inventories were also so allocated. It should be noted that, because the inter-industry table is used for deriving technological coefficients, output and intermediate inputs show the value of production and the value of materials used, rather than sales and purchases. Inventories are therefore allocated to the producing industry. For example, raw materials owned by the clothing industry will be allocated to the textile industry.

The following hypothetical example may prove of some assistance in summarizing the procedures outlined above.

<sup>12</sup> To derive estimates for the entire historical period, both real output and constant dollar expenditure on Gross National Product would first have to be rebased to 1949=100.

<sup>13</sup> The imports so deducted consist of those goods that are imported and that flow into final demand without further physical processing. The domestically produced goods may still have an import content. For example, imported parts will be used in the production of automobiles.

**TABLE III. An Example of the Allocation of Final Demand as Between Imports and Domestically Produced Goods by Industries of Origin**

	Year N	
	millions of constant, 1949 dollars	
1. Total purchases, new cars .....		1,000
2. Imports, new cars, C.I.F. border .....	200	
3. Indirect taxes, imported cars .....	20	
4. Trade, transportation, and storage, imported cars .....	90	
5. Value of imports, purchasers' prices (2)+(3)+(4) .....		310
6. Expenditure on domestically produced goods, purchasers' prices (1)-(5) .....		690
7. Taxes, domestic cars .....	140	
8. Trade, transportation storage, domestic cars .....	100	
9. Transportation equipment industry .....	450	
10. Total (7)+(8)+(9) .....	690	

It may be of some assistance to summarize the limitations evident in this technique. First, if any of the expenditure sub-components are in error for reasons connected with either or both of the techniques used in the projection of current values and in the deflation techniques, the allocation to industry of origin and the derivation of indirect taxes will be in error. Second, the proportionality assumptions underlying the inter-industry table may no longer hold, even in constant dollar terms. Third, the basic information used to compile the 1949 table was, in some instances, weak, so even if proportionality assumptions are reasonably good, the basic data underlying the inter-industry table may in some respects be defective.

#### Step 2: The Derivation of Indirect Indirect Taxes

The derivation of direct indirect taxes yielded, among other aggregates, estimates of the value of goods and services flowing to final demand, by industry of origin. Component by component was so

allocated and aggregating these components together with tax and imports across the rows yielded for each of the ten years, a column equivalent to total final output, by industry of origin.<sup>14</sup>

The base period inter-industry tables were then used to determine the indirect tax content of the final output. The use of these tables requires some explanation. When, for the economy as a whole, intermediate outputs and inputs are cancelled out, it can be seen that total final output must equal total primary input.<sup>15</sup> From this it becomes possible to relate specific components included in primary inputs to total final output.

<sup>14</sup> The aggregate of this column is equivalent to total final demand plus inventories, less interest and dividend receipts from abroad.

<sup>15</sup> For convenience, inter-industry terminology designates as primary inputs all of those inputs that are not intermediate. Thus, included in primary inputs will be components such as indirect indirect taxes less subsidies, and indirect imports.

The following sequence of tables provides an arithmetic illustration of the way in which the primary inputs may be related to final output.

Table IV, below, gives a simplified inter-industry table for a closed economy. All of the taxes imposed are "indirect indirect".

**TABLE IV. An Inter-Industry Flow of Goods and Services**

For disposition of output, read row For origin of input, read the column	Year O				
	A	B	C	Final Demand	Gross Output
Industry:					
A .....	—	25	—	75	100
B .....	10	—	90	100	200
C .....	15	35	—	250	300
Indirect taxes .....	5	6	21		
Other primary inputs .....	70	134	189		
<b>Total inputs .....</b>	<b>100</b>	<b>200</b>	<b>300</b>		

Table V, below, indicates the inputs required to produce one dollar's worth of output for each of the three industries. For example, to produce one

dollar's worth of output, industry A must use 10¢ and 15¢ worth of input from industries B and C respectively.

**TABLE V. Input into Each Industry per Dollar of Output**

	Year O		
	A	B	C
Industry:			
A .....	—	0.125	—
B .....	0.100	—	0.300
C .....	0.150	0.175	—
Indirect taxes .....	0.050	0.030	0.070
Other primary inputs .....	0.700	0.670	0.630
<b>Totals .....</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>

Table VI indicates the effects which an increase in final expenditure on the output of each industry will have on the output of all industries. Referring to Table V once again, it can be seen that to produce one dollar's worth of output, industry B will use goods valued at \$.125 from industry A, and \$.175 from industry C. To produce \$.125 industry

A will require \$.0125 from industry B and \$.0188 from industry C, while the initial demand generated in industry C will create demand for the products of industry B. Carrying through the reiterative steps outlined above, and based on assumptions of proportionality, the full effects of an increase in the demand for the products of a given industry may be

so traced. Table VI, below, summarizes these results. As will be noted from this table there is what is called a "feedback" effect. This occurs because the initial increase in demand for the products of an industry creates demand not only for the products of other industries, but also ad-

ditional demand for the products of the first industry. For example, an initial increase of \$1.00 in the demand for the product of industry A will finally result in an increase of \$1.02 for A., \$0.16 for B, and \$0.18 for C.

**TABLE VI. Total Output of Each Industry Resulting from the Production of a Dollar's Worth of Final Output of an Industry**

	A	B	C
Industry:			
A .....	1.0194	0.1344	0.0404
B .....	0.1561	1.0760	0.3229
C .....	0.1802	0.2085	1.0624

Finally, the increase in primary input resulting from the production of one dollar's worth of final output for an industry can be estimated by using Tables V and VI. Table VII below, summarizes these effects. From Table V it can be seen that to produce one dollar's worth of output, industry A must pay taxes of \$0.05, and must purchase other primary inputs of \$0.700. From Table VI it can be seen that an increase of \$1.00 in the output of industry A, will finally result in increases of \$1.02 for A, \$0.16 for B and so on. Using the relationships in Tables V and VI, it can be seen that an initial

increase of \$1.00 in A will finally result in industries A, B, and C, paying taxes of \$0.051, \$0.005, and \$0.013 respectively and purchasing primary inputs of \$0.714, \$0.105, and \$0.114 respectively. These results are summarized in Table VII. This table shows that an increase of \$1.00 in the output of industry A will result in industries A, B, and C paying taxes of \$0.068, and purchasing primary inputs amounting to \$0.932, a total of \$1.00. Thus, in any one industry, an increase in final output of \$1.00 will generate an increase in primary inputs for all industries amounting to \$1.00.

**TABLE VII. Total Primary Input Resulting from the Production of a Dollar's Worth of Final Output of an Industry**

	A	B	C
Indirect taxes .....	0.0683	0.0536	0.0861
Other primary inputs .....	0.9317	0.9464	0.9139
<b>Totals .....</b>	<b>1.0000</b>	<b>1.0000</b>	<b>1.0000</b>

The above notes on the derivation of the various supplementary inter-industry tables were necessary in order that the use of these tables in deriving estimates of "indirect indirect taxes" might be understood. Step one had yielded estimates of "direct indirect" taxes, on both imported and domestically produced goods, as well as estimates of the value of goods and services flowing to final demand, by industry of origin. In step two the

latter estimates were then used to derive estimates of "indirect indirect" taxes on domestically produced and imported goods. The total of "indirect indirect" and "direct indirect" taxes yielded the required estimate of constant dollar indirect taxes, which, when deducted from expenditure on Gross Domestic Product at market prices gave estimates of constant dollar expenditure on Gross Domestic Product at factor cost.

The use of the inter-industry tables to derive the estimates of "indirect indirect" taxes can be best demonstrated by a continuance of the arithmetic

example. Assume that, between the years O and N, the following changes occur in output flowing to final demand.

**TABLE VIII. Output Flowing to Final Demand in Millions of Constant Year "O" Dollars**

	Year O	Year N
Industry:		
A .....	75	150
B .....	100	190
C .....	250	450
<b>Totals</b> .....	<b>425</b>	<b>790</b>

Cross multiplying the rows in Table VII by the columns in Table VIII yielded the results given in Table IX below. The indirect indirect tax content of final expenditures in the year N is estimated as

\$59, while the other primary input content is estimated as \$730. Total primary input is, aside from rounding, equal to final output.

**TABLE IX. The Primary Input Content of Final Output in Millions of Constant Year "O" Dollars**

	Year O	Year N
Indirect taxes .....	32	59
Other primary inputs .....	393	730
<b>Totals</b> .....	<b>425</b>	<b>789</b>

As indicated from the above example, the "indirect indirect" tax content of final demand expenditures was obtained by applying the primary input coefficients for each of import and domestic taxes, as published in Table 3B, of the inter-industry table,<sup>16</sup> to the constant dollar measures of output flowing to final demand, by industry, as determined in Step 1.

#### **Assumptions and Limitations in the Derivation of Constant Dollar Indirect Taxes**

Constant input-output ratios are used to analyze the effect of changes in the composition of final demand on intermediate output and primary inputs. There are several problems associated with these constant coefficients. First, the use of coefficients based on 1949 relationships assumes that there has been no change in technology as between 1949 and the current period. If more firms adopt improved techniques, or if there is an abrupt technological change in some branch of industry, these coefficients may cease to be representative.

Second, the use of constant ratios assumes a linear relationship between the output of each industry and corresponding inputs. For example, given an increase in final demand for the output of industry A, it is assumed that intermediate output and primary inputs for all industries affected by the increased demand will change proportionally. This assumption may have serious implications with respect to such "indirect indirect" taxes as real property taxes, which, in the short run, will not fluctuate with changes in production. To satisfactorily estimate such constant dollar taxes it may be necessary to devise a system of non-linear equations, perhaps relating property taxes to such variables as capital stock.

Third, even if there has been no change in technology, inputs may be influenced by changes in relative prices. The 1949 inter-industry table reflects the way in which primary and intermediate inputs, as valued in the prices of that year, were combined to produce outputs. To the extent that changes in relative prices result in the substitution of one input for another, the use of the constant coefficients may produce misleading results.

<sup>16</sup> *op. cit.*

### An Assessment of the Results

As has already been mentioned in the introductory sections of this study, it was anticipated that the adjustment of real Gross Domestic Product at market prices to a factor cost basis would produce only small differences between the relative movements of the two series, real Gross Domestic Product at market prices and real Gross Domestic Product at factor cost. The following table, which shows

the percentage change from the preceding year in the three production aggregates, expenditure on Gross National Product at market prices, expenditure on Gross Domestic Product at market prices, and expenditure on Gross Domestic Product at factor cost, all measured from expenditure data, indicates that the adjustment from a market price to a factor cost basis of valuation results in few significant differences in terms of year-to-year changes.

**TABLE X. Constant Dollar Measurements of Expenditure on Production<sup>1</sup>**  
(Percentage change from preceding year)

	Expenditure on Gross National Product at market prices	Expenditure on Gross Domestic Product at market prices	Expenditure on Gross Domestic Product at factor cost
1951.....	6.1	5.5	6.0
1952.....	9.3	8.9	8.9
1953.....	3.6	3.4	3.0
1954.....	- 3.5	- 3.3	- 3.6
1955.....	8.2	8.2	8.1
1956.....	9.6	9.6	9.7
1957 <sup>2</sup> .....	- 0.3	- 0.1	- 0.4
1958 <sup>2</sup> .....	1.4	1.4	1.2
1959 <sup>2</sup> .....	2.2	2.2	1.9

<sup>1</sup> Data on which these measurements are based exclude the residual error of estimate.

<sup>2</sup> Based on 1949 weight-based data, as published in Table V of National Accounts, *Income and Expenditure, 1960*.

The United Kingdom's constant price data show that the conversion from a market price to a factor cost basis of valuation, results in statistical differences that are even less than are those shown by the Canadian data. (Some explanation for this may be that the United Kingdom excludes customs duties from their market price data. In 1958, such duties amounted to approximately 40% of the total of taxes on expenditure.)<sup>17</sup>

Estimates of constant dollar indirect taxes are derived by means of the relationships depicted in the inter-industry table for the year 1949. For any year other than the base year, it therefore is essential that the expenditure data used in obtain-

ing such estimates be on a 1949 time and weight base. Because the expenditure data are now on a 1957 weight base,<sup>18</sup> such estimates of constant dollar indirect taxes can no longer be obtained.

To indicate a way in which a balancing set of accounts in real terms may be presented, Table XI, on the following page, shows the results of this study for the years 1953 and 1954.

<sup>18</sup> For the period from 1947 to 1962 two weight bases have been used in the valuation of the constant dollar Gross National Expenditure estimates. Data for the period from 1947 to 1955 are on a 1949 weight base while data for the period from 1956 to 1962 are on a 1957 weight base. The two series have been linked at the year of overlap, 1956. Quarterly estimates are published only on a 1957 time base, while annual estimates are published on both a 1957 and a 1949 time base.

<sup>17</sup> United Kingdom, *op. cit.*, as shown in data from Tables I and II.

TABLE XI. Gross Domestic Product at Factor Cost in Constant (1949) Dollars, 1953 and 1954<sup>1</sup>

Industry approach	1953	1954	Expenditure approach	1953	1954
	millions of dollars			millions of dollars	
1. Index of Gross Domestic Product at factor cost, 1949=100 .....	(126.7)	(123.9)	1. Expenditure on Gross National Product at Market prices.....	20,794	20,186
2. Gross Domestic Product at factor cost (before statistical difference) <sup>2</sup> .....	18,859	18,443	2. Deduct: Residual error of estimate <sup>3</sup> .....	- (-)117	- 11
3. Statistical difference <sup>4</sup> .....	66	- 70	3. Interest and dividend receipts from non-residents .....	- 151	- 135
4. Gross Domestic Product at factor cost .....	18,925	18,373	4. Add: Interest and dividend payments to non-residents .....	360	381
			5. Expenditure on Gross Domestic Product at market prices .....	21,120	20,421
			6. Deduct: Constant dollar indirect taxes, less subsidies .....	- 2,130	- 2,119
			7. Expenditure on Gross Domestic Product at factor cost (before statistical difference)..	18,990	18,302
			8. Statistical difference <sup>4</sup> .....	- 65	71
			9. Expenditure on Gross Domestic Product at factor cost.....	18,925	18,373

<sup>1</sup> Although the deflation of indirect taxes was done for the entire 1950-59 period, only two years of the test are shown here. This is because unrevised or preliminary industry-of-origin output data were used and these data are not available for publication.

<sup>2</sup> As per Table 5, *National Accounts, Income and Expenditure, 1926-1956*. This is the current value National Accounts residual error of estimate, expressed in constant (1949) dollars.

<sup>3</sup> These estimates have been obtained by converting the indexes of Gross Domestic Product at factor cost, shown in item (1) of the industry approach to constant dollars, using \$14,885 millions as the estimate of Gross Domestic Product at factor cost for the year 1949.

<sup>4</sup> This is the statistical difference between the two estimates of Gross Domestic Product at factor cost, in constant dollars, and should not be confused with item (2) of the Expenditure approach.

## Alphabetical Industry Listing

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>A</b>				
Abrasive products, mfg. ....	111			
Acids, alkalies and salts, mfg. ....	56, 109			
Adhesives, mfg. ....	109			
Advertising .....		14, 24		
Agricultural implements, mfg. ....	110			
Agricultural services .....	106			
Agriculture .....	48, 49, 50, 53, 105, 127	11, 20, 21, 25, 27, 29, 31, 32	38(23), 61(119, 120), 62(121, 122)	18, 21, 28, 29, 67, 71, 74, 94, 97
Aircraft and parts, mfg. ....	57, 111			
Air transport and airports .....	113, 128	25, 32	35(5)	68, 84, 94
Aluminum products, mfg. ....	111			
Amusement, sporting and photographic goods, whole- sale .....	116, 117			
Animal oils and fats, mfg. ....	107			
Armature rewinding .....	112			
Artificial flowers and feathers, mfg. ....	109			
Artificial ice, mfg. ....	109			
Asbestos, mining .....	106			
Asbestos products, mfg. ....	111			
Automotive repair .....	112			
Automotive, wholesale .....	116, 117			
Awnings, tents and sails, mfg. ....	108			
<b>B</b>				
Bakery products, mfg. ....	107			
Banking .....	55, 119	14	42(45-49), 62(125)	70, 95
Barbering and hairdressing .....	122, 131		61(116)	70
Batteries, mfg. ....	111			
Beekeepers' and poultrymen's supplies, mfg. ....	110			
Beer, wine, distilled spirits, wholesale .....	116, 117			
Belting leather, mfg. ....	107			
Beverages, mfg. ....	107			
Bicycle and motorcycle repair .....	112			
Bicycles and parts, mfg. ....	111			
Biscuits, mfg. ....	107			
Blacksmithing, horseshoeing and general repair .....	112			
Boat building, mfg. ....	111			
Boilers, tanks and platework, mfg. ....	110			
Brass and copper products, mfg. ....	111			
Bread and other bakery products, mfg. ....	107			
Breakfast foods, mfg. ....	107			
Breweries, mfg. ....	107			
Bridge building and structural steel, mfg. ....	110			
Brooms, brushes and mops, mfg. ....	109			
Business service .....	52, 53, 121, 131	14, 24	61(117)	70, 95, 97
Business sector (see commercial)				
Butter and cheese, mfg. ....	107			
Buttons and fasteners, mfg. ....	109			

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>C</b>				
Candles, mfg. ....	109			
Canning and processing, mfg. ....	107			
Carbonated beverages, mfg. ....	107			
Carpets, mats and rugs, mfg. ....	108			
Chemicals and allied products, mfg. ....	109	23, 25		25, 68, 80, 94
Chemicals, other, mfg. ....	109			
Chemicals, wholesale ....	116, 117			
Children's factory clothing, mfg. ....	108			
Clothing, mfg. (see also men's, women's, children's clothing) ....	108	30		25, 67, 78, 94
Clothing and shoe stores, retail (see also men's, women's, children's and family clothing stores) ....				69, 89
Clothing, miscellaneous, mfg. ....	108			
Coal and coke, wholesale ....	116, 117			
Coal, mining ....	107	23		
Coal tar distillation, mfg. ....	109			
Coke products, mfg. ....	109		64(133)	
Commercial industries ....		14, 21, 27	63(129)	27, 71, 92
Commercial industries less agriculture ....				27, 71, 93
Communication ....	115, 129	25		69, 86, 95
Communication, other ....	115			69, 95
Community, recreation, business and personal service	120, 130	11, 21, 24, 32		18, 23, 30, 70, 90, 91, 95
Community service ....	120, 130		63(130)	70, 95, 97
Compressed gases, mfg. ....	109			
Concentrated milk products, mfg. ....	107			
Concrete products, mfg. ....	111			
Confectionery, mfg. ....	107			
Construction ....	48, 50, 51, 53, 112, 128	11, 20, 21, 22, 29, 32	62(122, 123, 124), 64(134)	22, 28, 29, 68, 82, 94, 97
Contract drilling (excluding drilling for oil and gas).....	112, 128	32		68, 94, 97
Cooperage, mfg. ....	110			
Cordage, rope and twine, mfg. ....	108			
Corsets, girdles and foundation garments, mfg. ....	108			
Cotton and jute bags, mfg. ....	108			
Cotton goods, mfg. ....	108			25
Cotton goods, miscellaneous, mfg. ....	108			
Cotton thread, mfg. ....	108			
Cotton yarn and cloth, mfg. ....	108			
<b>D</b>				
Dairy products, mfg. ....	107			
Dairy products, other, mfg. ....	107			
Defence service (armed forces only) ....	120, 130		35(5), 63(128)	
Department stores, retail ....	118			69, 89, 95
Distilled liquors, mfg. ....	107			
Domestic clay products, mfg. ....	111			
Domestic service ....	122, 131		63(130)	70
Dominion post office (see postal service)				
Drug stores, retail ....	119			69, 95
Dry goods and apparel, wholesale.....	116, 117			

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>D - Concluded</b>				
Durable manufacturing (see manufacturing, durable)				
Dyeing and finishing of textiles, mfg. ....	108			
Dyeing, cleaning and pressing .....	122		61(118)	
Dyeing, cleaning, pressing and laundries .....	131			70, 95
<b>E</b>				
Education .....	54, 120, 130	24	39(26, 29), 61(118), 63(130)	70, 95
Electrical apparatus and supplies, mfg. ....	111			68, 82, 94
Electrical goods, wholesale .....	116, 117			
Electrical products, miscellaneous, mfg. ....	111			
Electric lamps and lamp shades, mfg. ....	109			
Electric, neon and other signs, mfg. ....	110			
Electric power and gas utilities .....	48, 50, 53, 112, 128	11, 20, 21, 22, 29, 32		22, 28, 29, 68, 71, 83, 94, 97
Electric power utilities .....	112			68, 94
Electroplating .....	112			
Embroideries, pleating, mfg. ....	108			
Engraving, stereotyping and electroplating, mfg. ....	109			
Excelsior, mfg. ....	110			
<b>F</b>				
Fabric auto accessories, mfg. ....	108			
Fabric gloves and mittens, mfg. ....	108			
Family clothing stores, retail .....	118			95
Farm products (raw materials), wholesale .....	116, 117			
Farm supplies, wholesale .....	116, 117			
Federal administration and defence .....	53, 119, 130			70, 95
Feed mills, mfg. ....	107			
Feeds, mfg. ....	107			
Fertilizers, mfg. ....	56, 109			
Finance, insurance and real estate .....	53, 119, 130	11, 14, 21, 24, 32	39(26), 42(45-49), 43(57, 58), 62(125, 127)	18, 23, 30, 70, 90, 91, 95, 97
Fish processing, mfg. ....	107			
Fishing .....	106, 127			67, 94
Fishery service .....	106			
Fishing and trapping .....	48, 49, 106, 127	11, 21, 31, 32		29, 67, 74, 94, 97
Flour mills, mfg. ....	107			
Food and beverage stores, all other, retail .....	118			95
Food products (ex. groceries) and tobacco, wholesale..	116, 117			
Food stores, retail .....				88
Foods and beverages, mfg. ....	107	14, 23, 29, 30		67, 77, 94
Foods, mfg. ....	107			
Foods, miscellaneous, mfg. ....	107			
Forest products (ex. lumber), wholesale .....	116, 117			
Forestry .....	48, 49, 106, 127	11, 21, 22, 29, 31, 32		22, 28, 29, 67, 74, 94, 97

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>F - Concluded</b>				
Forestry service .....	106			
Fountain pens and pencils, mfg. ....	109			
Fruit and vegetable preparations, mfg. ....	107			
Fuel dealers, retail .....	119			95
Fuels, mining .....	107			67, 76, 94
Fur dressing and dyeing, mfg. ....	108			
Fur goods, mfg. ....	108			
Furniture, mfg. ....	110			
Furniture and house furnishings, wholesale .....	116, 117			
Furniture, appliance and radio stores, retail .....	118			69, 95
Furniture repair .....	112			
<b>G</b>				
Garages and filling stations, retail .....	118			69, 95
Gas utilities .....	112	22	64(133)	68, 94
General merchandise, wholesale .....	116, 117			
General stores, retail .....	118			95
Glass products, mfg. ....	111			
Gold (auriferous quartz and placer mines only), mining	106	22		
Goods-producing industries .....	48, 50, 105, 127	13, 17, 20, 21, 24, 25, 26, 27, 29	64(134)	21, 22, 23, 27, 67, 71, 72, 73, 94, 97
Goods-producing industries less agriculture .....				21, 71, 92
Government administration, federal (see federal administration)				
Government administration, municipal (see municipal administration)				
Government administration, provincial (see provincial administration)				
Grain elevators .....	114, 129	32		69, 95
Grain mill products, mfg. ....	107			
Groceries and food specialties, wholesale .....	116, 117			
Grocery and combination stores (chain), retail .....	118	24		24, 69, 88, 95
Grocery and combination stores (independent), retail....	118	24		24, 69, 88, 95
Gross Domestic Product, aggregate index .....	105, 127	12, 14, 21, 26, 27, 31, 32	61(112), 63(131)	12, 17, 18, 19, 25, 26, 31, 67, 71, 72, 73, 94, 96
Gross Domestic Product at factor cost, meaning of and relation to other aggregates .....	51	11, 13, 14, 17, 21	35-42 (1-44), 64(136), 135-144	96
Gross Domestic Product less agriculture .....				71, 92, 97
Gypsum, mining .....	106			
Gypsum products, mfg. ....	111			
<b>H</b>				
Hair goods, mfg. ....	109			
Hardware stores, retail .....	118			69, 95
Hardware stores, wholesale .....	117			
Hardware, tools and cutlery, mfg. ....	110			
Hardwood flooring, mfg. ....	110			

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>H - Concluded</b>				
Harness repair .....	112			
Hats and caps, mfg. ....	108			
Health .....	121, 131		39 (26)	70, 95
Heating and cooking apparatus, mfg. ....	110			
Heavy electrical machinery, mfg. ....	111			
Hosiery, mfg. ....	108			
Hospitals .....	54, 121, 131	24	39 (29), 61 (118), 63 (128, 130)	70, 95
Hotels, motels and lodging houses .....	122, 131		61 (118, 119)	70, 95
Household, office and store machinery, mfg. ....	110			
Hydraulic cement, mfg. ....	111			
<b>I</b>				
Imported clay products, mfg. ....	111			
Index of Industrial Production .....	47, 49, 51, 52, 53, 55	11, 12, 13		12, 71, 93, 97
Industrial machinery, mfg. ....	110			
Inks, mfg. ....	109			
Insurance, life, non-life, and real estate agents and agencies .....	55, 119		42 (45-49), 62 (125, 126)	70
International bridges, tunnels and ferries .....	114, 129			69
Iron and steel products, mfg. ....	110	31		68, 81, 94
Iron and steel products, miscellaneous, mfg. ....	110			
Iron castings, mfg. ....	110			
Iron ore, mining .....	57, 106	22		
<b>J</b>				
Jewellery and silverware, mfg. ....	111			
Jewellery stores, retail .....	119			95
Jewellery, wholesale .....	117			
<b>K</b>				
Knitted goods, other, mfg. ....	108			
Knitting mills, mfg. ....	108			
<b>L</b>				
Lasts, trees and shoe findings, mfg. ....	110			
Laundries .....	123			
Leather and leather goods, wholesale .....	117			
Leather boot and shoe findings, mfg. ....	107			
Leather boots and shoes, mfg. ....	107			
Leather gloves and mittens, mfg. ....	107			
Leather products, mfg. ....	107			67, 78, 94
Leather products, other, mfg. ....	107			
Leather tanneries, mfg. ....	107			
Lime, mfg. ....	111			
Lithographing, mfg. ....	109			

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>L - Concluded</b>				
Locksmiths, gunsmiths, tools and cutlery repair .....	112			
Lumber and building materials (other than metal), wholesale .....	117			
Lumber and building material dealers, retail .....	118			69, 95
<b>M</b>				
Macaroni and kindred products, mfg. ....	107			
Machinery, equipment and supplies, wholesale .....	117			
Machinery, mfg. ....	110			
Machine shops, mfg. ....	110			
Machine shops, repair .....	112			
Machine tools, mfg. ....	110			
Manufactured gas, (utilities).....	112			
Manufacturing .....	48, 50, 51, 52, 53, 55, 107, 127	11, 13, 20, 21, 23, 25, 29, 30, 32	64 (133)	18, 22, 28, 29, 30, 67, 71, 76, 94, 97
Manufacturing, durable .....	110	23, 29		22, 29, 68, 80, 94
Manufacturing industries, miscellaneous .....	109			68, 94
Manufacturing industries, miscellaneous, n.e.c. ....	110			
Manufacturing, non-durable .....	107	23, 29, 30		22, 25, 29, 67, 76, 94
Manufacturing repair service .....	51, 112, 128	32	61 (119)	68, 94, 97
Meat products, mfg. ....	107			
Medicinal and pharmaceutical preparations, mfg. ....	109			
Men's clothing contractors, mfg. ....	108			
Men's clothing stores, retail .....	118			95
Men's factory clothing, mfg. ....	108			
Men's, women's and children's clothing, mfg. ....	108			
Metals and metal work, wholesale .....	117			
Metals, mining .....	51, 106	22		67, 75, 94
Metals, other, mining .....	106			
Mining .....	48, 49, 51, 52, 53, 106, 127	11, 13, 20, 21, 22, 23, 29, 32		22, 28, 29, 67, 71, 75, 94, 97
Monumental and ornamental stone, mfg. ....	111			
Morticians' goods, mfg. ....	110			
Motor vehicle dealers, retail .....	118			69, 90, 95
Motor vehicles, mfg. ....	111	20, 31		31
Motor vehicle parts, mfg. ....	111			
Municipal administration .....	120, 130			70, 95
Municipal waterworks .....	112, 128	32		68, 94, 97
Musical instruments, mfg. ....	109			
<b>N</b>				
Narrow fabrics, mfg. ....	108			
Natural gas, mining .....	107	22		
Natural gas, sales and distribution (utilities) .....	112			
Non-business (see non-commercial)				
Non-commercial industries .....	53-55	14, 21, 27	39 (26-30), 42-43 (50-56), 63 (128, 129, 130)	71, 93

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>N - Concluded</b>				
Non-durable manufacturing (see manufacturing, non-durable)				
Non-ferrous metal products, mfg. ....	111			68, 81, 94
Non-ferrous metal products, other, mfg. ....	111			
Non-ferrous metal smelting and refining, mfg. ....	51, 111			
Non-metallic mineral products, mfg. ....	111			68, 82, 94
Non-metallic mineral products, other, mfg. ....	111			
Non-metals, mining ....	106			67, 75, 94
Non-metals, other, mining ....	106			
<b>O</b>				
Oilcloth, linoleum and other fabrics, mfg. ....	108			
Oiled and waterproof clothing, mfg. ....	108			
Other goods industries n.e.c. ....	48, 50, 51, 112, 128	21		18, 29, 68, 94
<b>P</b>				
Paints, varnishes and lacquers, mfg. ....	109			
Paper and paper products, wholesale ....	117			
Paper boxes and bags, mfg. ....	108			
Paper products, mfg. ....	108			67, 79, 94
Paper products, other, mfg. ....	108			
Passenger transport (interurban) ....	113, 128			
Passenger transport (urban, suburban and interurban)				68, 85, 94
Passenger transport (urban and suburban) ....	113, 128			
Personal service ....	52, 122, 131	14	61(117)	70, 95, 97
Personal service, other, n.e.c. ....	123, 131			70
Petroleum and coal, products of, mfg. ....	109			67, 79, 94
Petroleum and coal, products of, miscellaneous, mfg. ....	111			
Petroleum and petroleum products, wholesale ....	117			
Petroleum, mining ....	107	22		
Petroleum products, mfg. ....	109	23		25
Photography ....	123			70
Pipelines, oil and gas ....	114, 129	25, 32		69
Pipes, lighters and smokers' supplies, mfg. ....	109			
Plastic products, mfg. ....	109			
Plumbing and heating equipment and supplies, wholesale ....	117			
Polishes and dressings, mfg. ....	109			
Postal service ....	115, 129			69
Prepared stock and poultry feeds, mfg. ....	107			
Primary iron and steel, mfg. ....	110	31		31
Primary plastics, mfg. ....	109			
Printing and bookbinding, mfg. ....	109			
Printing and publishing, mfg. ....	109			
Printing, other, mfg. ....	109			
Printing, publishing and allied industries, mfg. ....	109	24		67, 79, 94
Process cheese, mfg. ....	107			
Products of petroleum and coal, mfg. (see petroleum and coal, products of)				
Products of petroleum and coal, miscellaneous, mfg. (see petroleum and coal, products of, miscellaneous, mfg.)				

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>P - Concluded</b>				
Prospecting .....	112			
Provincial administration .....	120, 130			70, 95
Public administration and defence .....	54, 119, 130	11, 21, 24, 32	39 (26, 27, 28, 29, 30), 42-43 (50-56), 63 (128, 130)	18, 23, 30, 70, 90, 91, 95, 97
Publishing (only) of periodicals, mfg. ....	109			
Pulp and paper, mfg. ....	108			
<b>Q</b>				
Quarrying and sand pits, mining .....	107			94
<b>R</b>				
Radio and electrical repair .....	112			
Radio and television broadcasting .....	55, 115, 129	14, 24		69
Railway rolling stock, mfg. ....	111			
Railway transport .....	113, 128		62 (122)	68, 84, 85, 94
Recreation service .....	121, 131			70, 95, 97
Refrigerators, vacuum cleaners and appliances, mfg. ....	111			
Rents (paid and imputed) .....	119, 130	24	38 (25), 39 (26), 43 (57, 58), 64 (134)	70, 95
Repair service (see manufacturing repair service)				
Repairs, miscellaneous .....	112			
Restaurants, cafes, taverns .....	123, 131			70, 95
Retail trade .....	52, 53, 54, 117, 130	11, 24, 30	61 (119), 64 (133)	30, 69, 87, 88, 89, 95
Roofing paper, mfg. ....	108			
Rubber and metal stamps and stencils, mfg. ....	110			
Rubber products, mfg. ....	107			67, 77, 94
<b>S</b>				
Salt, mfg. ....	111			
Salt, mining .....	106			
Sand and gravel pits, mining .....	107			
Sand-lime brick, mfg. ....	111			
Sash, door and planing mills, mfg. ....	110			
Sausage and sausage casings, mfg. ....	107			
Saw and planing mills, mfg. ....	110			
Sawmills, mfg. ....	110			
Scientific and professional equipment, mfg. ....	109			
Service-producing industries .....	113, 128	13, 17, 21, 24, 25, 26, 27, 29	40 (37, 38), 61 (116, 118)	23, 27, 68, 71, 72, 73, 94, 97
Sheet metal products, mfg. ....	110			
Shipbuilding, mfg. ....	111			
Shipping (see water transport)				
Shoe repair .....	112			
Shoe stores, retail .....	118			95
Sign painting .....	112			
Slaughtering and meat packing, mfg. ....	107			

## Alphabetical Industry Listing - Continued

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>S - Concluded</b>				
Soaps, washing compounds, mfg. ....	109			
Sporting goods, mfg. ....	109			
Statuary, art goods and novelties, mfg. ....	110			
Stevedoring .....	114, 128			
Stone quarries, mining .....	107			
Storage .....	114, 129			69, 85, 95
Storage and warehousing .....	114, 129			
Sugar refining, mfg. ....	107			
Synthetic textiles and silk, mfg. ....	108			25
<b>T</b>				
Tailoring and dressmaking .....	112			
Taxicab service .....	113, 128		61(116)	69
Taxidermy .....	112			
Telecommunication equipment, mfg. ....	111	25		
Telegraph and cable .....	115, 129			69
Telephone .....	115, 129			69, 95
Television broadcasting (see radio and television broadcasting)				
Textile products, other, mfg. ....	108			
Textiles, mfg. ....	108	30		67, 78, 94
Theatres and theatrical service .....	121			
Tobacco and tobacco products, mfg. ....	107			67, 77, 94
Tobacco, cigars and cigarettes, mfg. ....	107			
Tobacco processing and packing, mfg. ....	107			
Toilet preparations, mfg. ....	109			
Toys and games, mfg. ....	109			
Trade .....	115, 129	13, 20, 21, 24, 29, 30, 32		18, 23, 30, 69, 86, 95, 97
Trade composition, mfg. ....	109			
Trade, retail (see retail trade)				
Trade, wholesale (see wholesale trade)				
Transportation .....	52, 53, 54, 113, 128	21, 25, 30	64(133)	30, 68, 83, 84, 94
Transportation equipment, mfg. ....	111			68, 81, 94
Transportation equipment, other, mfg. ....	111			
Transportation, other .....	114			69
Transportation, service incidental to .....	114			
Transportation, storage and communication .....	113, 128	11, 20, 21, 24, 29, 32		18, 23, 30, 68, 83, 94, 97
Trapping .....	106, 127			67, 94
Truck transport .....	113, 128			69
Typewriter supplies, mfg. ....	109			
<b>U</b>				
Umbrellas, mfg. ....	110			
Undertaking .....	123, 131			70
Uranium, mining .....		22		
Utilities, other public .....	112			

## Alphabetical Industry Listing - Concluded

	Statistical sources and methods	Introduction and industrial analysis	Concepts and problems	Statistical tables and charts
	page	page	page and (paragraph)	page
<b>V</b>				
Variety stores, retail .....	118			69, 90, 95
Vegetable oil mills, mfg. ....	109			
Veneer and plywood, mfg. ....	110			
<b>W</b>				
Waste materials (including scrap metal), wholesale .....	117			
Watch, clock and jewellery repair .....	112			
Water and sanitary services (see municipal waterworks)				
Water transport .....	114, 128		35 (5)	
Water transport and stevedoring .....				69, 94
Water transport, service incidental to .....	114			
White metal alloys, mfg. ....	111			
Wholesale trade .....	52, 53, 115, 129	11, 24, 30	64 (133)	30, 69, 86, 87, 95
Wholesalers, other than wholesalers proper .....	117, 129			69, 95
Wholesalers proper .....	116, 129			69, 87, 95
Wholesalers proper, other .....	117			
Wines, mfg. ....	107			
Wire and wire goods, mfg. ....	110			
Women's clothing contractors, mfg. ....	108			
Women's clothing stores, retail .....	118			95
Women's factory clothing, mfg. ....	108			
Wooden boxes and baskets, mfg. ....	110			
Woodenware, mfg. ....	110			
Wood products, other, mfg. ....	110			
Wood products, mfg. ....	110			68, 80, 94
Wood turning, mfg. ....	110			
Wool cloth, mfg. ....	108			
Wool goods, mfg. ....	108			
Wool goods, miscellaneous, mfg. ....	108			
Wool yarn, mfg. ....	108			

INDEXES OF REAL DOMESTIC PRODUCT BY INDUSTRY OF ORIGIN BY QUARTERS, 1962

Table with multiple columns and rows, containing numerical data for various industries and quarters. The table is partially obscured by a large watermark.

ADDENDUM

INDEXES OF REAL DOMESTIC PRODUCT BY INDUSTRY OF ORIGIN BY QUARTERS, 1962

This addendum includes 1962 data pertaining to Tables 3 and 4 beginning on pages 73 and 92 respectively.

Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1962

1949 = 100

	Adjusted for seasonal variation				Without seasonal adjustment				Year <sup>1</sup>
	I	II	III	IV	I	II	III	IV	
Gross Domestic Product .....	169.5	170.6	172.8	173.7	152.2	169.4	194.4	169.8	171.4
Goods-producing industries .....	168.7	169.5	172.7	173.4	144.9	164.2	211.0	162.2	170.6
Agriculture .....	136.7	129.8	139.6	137.7	72.3	97.9	299.9	68.8	134.7
Forestry .....	146.9	141.7	140.4	143.6	117.2	126.4	163.8	154.5	140.5
Fishing and trapping .....	144.1	123.6	131.4	130.0	74.9	127.8	189.6	129.4	130.4
Mining <sup>2</sup> .....	280.4	287.7	291.1	290.6	277.5	283.7	300.8	287.6	287.4
Metals .....	194.2	205.3	199.6	192.0	180.6	204.9	214.2	191.3	197.7
Non-metals .....	221.8	224.1	227.4	213.7	210.4	228.7	227.5	223.6	222.5
Fuels .....	471.8	463.0	488.3	505.0	515.4	444.3	472.1	491.4	480.8
Manufacturing <sup>3</sup> .....	160.5	164.1	166.5	168.5	155.7	168.0	166.0	169.7	164.9
Non-durable manufacturing .....	162.8	165.3	165.4	165.9	156.6	166.1	167.8	168.7	164.8
Foods and beverages .....	159.3	162.1	157.5	158.3	134.3	160.9	176.0	164.6	158.9
Tobacco and tobacco products .....	205.1	201.2	203.3	206.2	202.3	215.2	191.8	205.6	203.7
Rubber products .....	154.0	167.7	169.9	176.7	157.5	173.9	156.6	182.4	167.6
Leather products .....	128.6	126.2	126.4	125.4	137.2	128.6	117.3	123.7	126.7
Textiles .....	142.3	145.1	150.5	150.6	147.7	148.6	136.4	153.5	146.6
Clothing .....	106.2	111.6	112.9	114.0	111.3	106.9	112.9	113.0	111.0
Paper products .....	157.7	158.1	161.0	159.6	153.5	160.5	161.3	161.1	159.1
Printing, publishing and allied industries .....	152.1	155.0	154.5	152.9	151.4	156.4	150.0	158.1	154.0
Products of petroleum and coal .....	269.7	263.8	267.2	287.7	273.1	253.9	275.3	288.6	272.8
Chemicals and allied products .....	232.7	237.3	232.7	228.2	229.0	245.4	233.3	225.3	233.2
Miscellaneous manufacturing .....	231.8	234.3	240.9	241.2	224.8	228.9	242.3	252.7	237.2
Durable manufacturing .....	157.7	162.7	167.8	171.5	154.8	170.2	164.0	170.9	165.0
Wood products .....	148.5	149.4	153.3	157.9	146.8	152.0	162.7	144.6	151.5
Iron and steel products .....	144.8	149.5	156.8	157.7	139.1	154.8	158.5	155.8	152.1
Transportation equipment .....	141.5	151.0	160.7	169.9	153.9	178.0	121.9	172.9	156.7
Non-ferrous metal products .....	151.3	150.2	149.1	144.9	150.6	149.9	147.9	147.2	148.9
Electrical apparatus and supplies .....	206.6	211.2	213.1	221.3	203.3	205.3	213.5	229.4	212.9
Non-metallic mineral products .....	227.4	242.7	242.6	248.2	180.3	249.3	279.8	254.0	240.9
Construction .....	172.1	173.8	169.8	170.4	109.0	175.8	215.5	183.5	171.0
Electric power and gas utilities .....	335.7	337.7	343.4	339.0	374.9	328.5	298.7	348.7	337.7
Service-producing industries .....	170.4	171.9	172.9	174.1	160.3	175.1	175.7	178.4	172.4
Transportation, storage and communication .....	179.8	177.2	179.8	181.5	161.8	181.4	190.4	183.1	179.2
Transportation .....	167.8	165.4	167.3	166.8	145.4	171.5	182.0	166.5	166.4
Air transport and airports .....	738.4	688.4	702.5	687.8	628.9	718.3	842.9	619.5	702.4
Railway transport .....	120.4	117.8	115.6	115.2	108.1	119.1	126.1	116.1	117.4
Passenger transport (urban, suburban and inter-urban) .....	71.4	71.1	71.6	71.9	68.2	70.4	78.0	70.5	71.8
Storage .....	202.8	161.0	180.1	231.8	164.5	173.1	192.0	241.8	192.9
Communication .....	225.1	227.6	230.4	234.1	228.0	223.2	224.2	242.4	229.4
Trade .....	164.2	166.7	166.7	168.4	148.4	173.6	163.0	182.3	166.8
Wholesale trade .....	171.3	175.7	176.8	175.5	167.0	187.3	170.7	174.5	174.9
Wholesalers proper .....	152.6	157.6	155.9	154.6	151.2	175.9	143.3	150.2	155.2
Retail trade .....	160.4	162.0	161.5	164.7	138.7	166.5	158.9	186.4	162.6
Grocery and combination stores (chain) .....	319.7	320.0	316.3	326.6	315.2	325.8	306.8	334.0	320.5
Grocery and combination stores (independent) ..	157.7	153.8	157.7	160.1	150.5	155.3	157.7	164.3	157.0
Clothing and shoe stores .....	128.1	131.7	135.1	129.8	105.1	134.0	122.1	165.3	131.6
Department stores .....	144.7	150.9	152.5	149.4	116.5	144.8	140.0	200.8	150.5
Motor vehicle dealers .....	209.2	209.0	186.5	224.6	197.4	262.8	176.4	200.5	209.3
Variety stores .....	181.6	184.9	188.8	181.0	129.0	180.5	177.3	248.6	183.8
Finance, insurance and real estate .....	179.7	182.8	183.3	185.5	176.7	183.8	186.7	184.4	182.9
Public administration and defence .....	186.7	189.9	189.3	185.7	181.5	189.8	195.5	184.9	187.9
Community, recreation, business, personal service ..	156.0	156.8	159.3	160.5	151.8	157.4	163.2	160.6	158.2

<sup>1</sup> The annual averages of the quarterly indexes are shown in this column. These indexes are quarterly projections of the bench-mark indexes shown in Tables 1 and 2, beginning on pages 67 and 71 respectively.

<sup>2</sup> See page 75.

<sup>3</sup> See page 76.

**Special Purpose Quantity Indexes of Gross Domestic Product at Factor Cost, by Industry of Origin,  
by Quarters, 1962  
1949 = 100**

	Adjusted for seasonal variation				Without seasonal adjustment				
	I	II	III	IV	I	II	III	IV	Year
Gross Domestic Product less agriculture .....	173.5	175.5	176.8	178.0	161.7	177.9	181.8	181.9	175.8
Goods-producing industries less agriculture .....	176.9	179.6	181.0	182.4	163.2	181.0	188.5	185.8	179.7
Commercial industries .....	168.2	169.2	171.4	172.5	149.5	167.7	194.7	168.3	170.1
Commercial industries less agriculture .....	172.4	174.4	175.7	177.1	159.7	177.0	180.8	181.5	174.8
Non-commercial industries .....	184.2	186.9	187.8	186.9	181.0	187.0	191.5	186.4	186.5
Index of Industrial Production .....	181.5	185.5	188.1	189.5	179.2	187.8	186.4	190.7	186.0







STATISTICS CANADA LIBRARY  
BIBLIOTHÈQUE STATISTIQUE CANADA



1010463382

C.3

7008

722-7531