# D.B.S. REFERENCE PAPERS, 1949 

Dominion Bureau of Statistics, Ottawa, Canada
ISSUED BY AUTHORITY OF THE RT. HON. C. D. HOWE, MINISTER OF TRADE AND COMMERCE

## INVENTORY ACCOUNTING

## METHODS

OF

## CANADIAN MANUFACTURERS



## TABLE CF CONTENTS

Page

1. Introduction ..... 1
2. Methods, Definitions and Results ..... $2-5$
S. Table - Number of firms reporting in each category, classified by size of 1 irn ..... 6-7
3. Appendix - Sample Survey Schedule ..... $8-13$

## 1. INTRODUCTION

This report presents results of a survey of manufacturers' inventory accounting methods conducted by the Dominion Bureau of Statistics. Similar studies have been carried out in other countries, notably the United States, the United Kingdom and Australia, but heretofore adequate information on this phase of company accounting practice has not been available in Canada.

Accountants recognize a number of methods of valuing inventory for balance sheet purposes. The chief importance of the method adopted by a given firm lies in its effect on profits and on the value of inventory. Different methods of inventory valuation will result in significantly different values for profits and inventory in periods when prices are rising or falling.

Proper interpretation of statistics of inventory value, such as those collected annually and monthly by the Dominion Bureau of Statistics requires knowledge of prevalent methods of inventory valuation. It is desirable that the analyst have some idea of the extent to which apparent changes in aggregate inventory holdings reflect price changes rather than volume changes; and the degree to which rising or falling prices affect the value of reported inventory holdings is related to the inventory accounting methods adopted by firms.

In the calculation of economic aggregates, such as national income and gross national product, the question of inventory valuation is also of considerable importance. Inventory change is a component of gross national expenditure, and profits (including "inventory profits") are a component of national income. These aggregates are intended to messure only income and expenditure arising from current production in the economy; and it can be argued that inventory profits, which arise from changes in price levels, are more in the nature of capital or speculative gains.

This survey was begun by Mr. C.L. Barber, formerly of the Central Research and Development Staff of the Dominion Bureau of Statistics and completed by Mr. D.H. Jones, who also analyzed the returns received and prepared the table and the report.

The schedule used was designed with the assistance of the Canadian Chartered Accountants' Association. Valuable suggestions were also received from accountants of a number of the larger corporations, who were reçuested to comment on a draft schedule. A reproduction of the schedule is given in the Appendix.

* Prepared under the direction of A.S. Abell, Director, National Income Statistics, Research and Development Division.

Schedules wore distributed to 498 firms. Multiple plant firms were generally considered as one unte except where operations extended into several industries and different accounting methods were used in each. The survey was designed to include all firms with inventory of $\$ 1,000,000$ or more; about 10 per cent of firms with inventory between $\$ 300,000$ and $\$ 1,000,000$; and aluut one per cent of firms with inventory less then $\$ 300,000$, and gross production of $\$ 50,000$ or more. The control period was 1945 for multiple plant firms, and 1946 for single plants. (see Tatle)

Response, although not complete, was quite good. Of the 498 firms surveyed 414 sent back replies, complete or nearly so. (see Table)

A reproduction of the schedule will be found in the Appendix. Replies to questions $1,6,3,14,15,16,17$ have not been tabulated for the purposes of this report but will be used as a guide to future classificution of firms and for other purposes. The remaining replies were tabulated and classified into three main groups: laree lirms (inventory over $1,000,000$ ) ; medium firms (inventory $\$ 300,000$ to $\$ 1,000,0007$; small firms (inventory under $\$ 300,000$ ).

All firms were asked to report separately for each of the three ma in subdivisions of inventory: raw materials, work in process, and finished goods. The majority of firms were able to classify their inventory in this way. However, some firms reported for only one or two classes of inventory, such as raw materials, and finished goods (work in process not separated), or raw materials only, or total inventory only. To avoid the tabulation and presentation problems involved in imposing 8. further cross-classification of the data (i.e., accordinc to whether firms reported 3, 2, or 1 divisions of inventory), reports where less than three classes of inventory were indicated have been handed by un entry in a "not applicable" row, under the class or classes of inventory which were nut specified.

Some firms divided inventory into more than three classes, and indicated different accounting, treatment for each. For instance, raw materials might be divided between "coul" and "other". In such cases, both replies were tabulated and duplicating entries noted in the "duplications" row of the table.

Valuation of Inventory for Balance Sheet (Question 2)
Cost, and lower-of-cost-or-market valuations were used by almost all reporting firms, with a definite preference for the latter method indicated, especially amongst the larger firms. A few firms reported "market" in unswer to this question. A number of other methods were reported and these have been combined, for presentation, into one group. Typical answers in this latter category were "ceiling price", "1939 price", "arbitrary value" and variants of selling price or cost, such as "cost less $10 \%$ " "selling price less $25 \%$. Explanations of the exact meaning of "cost" and "market", as used here, are given in the following paragraphs.

Definition of cost (Question 3)
"Invoice cost" (i.e., the actual purchase price inclusive or exclusive of freight depending on the terms of sale) was not very widely used. It was most frequently found applied to raw material inventory. "Laid down cost" (invoice cost plus duty, shipping and handing costs) was widely reported for raw materials inventory, but relatively infrequently for work in process and finished goods inventory.
"Actual manuffactured cost", which is defined below, was by f"ar the most popular method for valuing vork in process and finished coods inventory.
"Standard cost" was reported 0 "" a number of firms. In a standard cost system, unit costs are set each year (or more frequently) in terms of assumed rates of efficiency for the various operations of the plant. Subsequent conparisons of actual cost with standards provide a measure of the extent to which the assumed standards have been met in practice, thus furnisibing a valuable check on ofticiency. A number of other metrods, including "ceiling price", "estimated manufacturing cost", "selling price less reduction to cost", and variations of stendard cost, where some proportion of the total was "standard" and the balance "actual", were also reported. Firms report.ng these methods have been combined in the "other" row of the Tuble.

Method of Determining Unit cost (Question 4)

It is frequently difficult, if not impossible, to allocate costs incurred in manufacturing exactly between goods sold or issued, and goods on hand (inventory). However, actual identified cost (specific item cost) was reported quite frequently Goods sold (or materials issued) are actually identified as to cost under this method. In the "1'irst-in-first-out" method, which was reported less frequently, sales or issues are assumed to be from the oldest items in stock, and goods left in inventory are automatically valued at more recent costs. In a period of rising prices this method will show a relatively high value for inventory.

The method reported most frequently was "average cost". Suveral variants are in use. In one variant ("monthly averare"), unit cost of sales or issues during a month is calculated by adding to inventory at the beginsing of the month, purchases during the month, both in physical and value terms, and calculating. by division, average unit cost of tris lot of goods. cost of goods sold or issued during the month, and inventory at the end of the month, are then valued by means of this "average unit cost". In another variant of this method ("moving average") unit costs are recalculated each time a purchase is made, rather than at monthly intervals only. A supplementary questionnaire was sent to a number of firms reporting averace cost, to determine which of the above variants was used most frequently. Most firms receiving this supplemer tary form indicated a preference for the monthly average method.

Components of Manuiactured Cost (Question 5)
"Manufactured cost", for purposes of" computing cost of sales, must of necessity, include all relevant costs. For the purpose of valuing inventory however, some elements of total cost may be omitted.

For a number of firms, menufacture costs, for purposes of inventory valuation, included only materials and direct labour. Nost firms include, in addition, factory overhesd (excluding depreciation). A hich proportion
also included depreciation. A number also included a share of administrative expenses. A few firms included, in addition to the other costs, a share of interest on bank lans und municipul taxes. In interpreting the answers to Question 5 , as tabulated, it should be noted that firms reporting under a given category will generally report also under all preceding categories. A firm reportine under "depreciation", for instance, will also report under "factory overhead excluding depreciation" and naturally will include in costs, materials and direct labour.

## Meaning of Market (Question 4)

As interpretations of "market" differ, it is necessary to define the term. "Replacement cost" was reported most frequently. By "replacemeat cost" is meant the cost of acruiring the goods in question by the usuel method of acquisition for the firm, whether this be by purchase or manufacture Other methods, reported less frequently, were "estimated selling price", "estimated selling, price less cost to sell and profit", and miscellaneous methods, which have been combined for tabulation, such as, "selling price less cost to sell", and "lower of (a) replacement cost, (b) selling price less cost to sell less normal profit".

Reserve Policy (Questians 10 and 11)

Frequently firms adjust their inventory value, as computed by the methods described above, by deducting a "reserve". This reserve is of suiflicient size to yield what the firm's directors cunsider to be a conservative ostimate of prof'it for the year. Almost half of the reporting firms indicated that they had such reserves. Larcer f'irms repurted reserves more frequently than the smaller ones. Approximately equal numbers reported that. (a) the reserve was shown separately on the balance sheet, (b) the reserve was riut shown soparately on the balance sheet.

Detormination of Selling Price (Question 12)

Firms were asked to report whether "actual cost" or "roplaceIIO日t cost" was the more important factor in determining the soling price of their products. The majority of firms indicated that "actual cost" was the more important, however, the proportion favourine "roplacement cost" was quite high.

Treatmont of Goods in Trunsit in Inventory Accounting (Quostion 13)

The question is rather difficult to analyzo without a knowledge of the distributive and financial structure of the firms, 8 s for instance, whether or not they own their own wholestle or retail outlets, snd whetrer or not
they are branch plants of U.S. corporations. However, a large number of frirms recorted thet goods in "out-transit" were included in inventory, and a considerably smaller number included "in-transit" goods. Coods on consicnment to other firms were frequently included, but only a fevi irms reported inclusion of foocs received on consigmment from othere.

SURVEY OF YAN'FACTUPERS' I NVENTORT ACCCONTING IETHCDS
Fumber of Firma Reporting in Eech Gategory. Clabsifled by size of Fine

| Fipms Surveyad <br> Firm Reporting | Lergo Elrms |  |  | Wdivimpires |  |  | Small Flinis |  |  | 211 Frms |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{array}{r} 328 \\ 292 \end{array}$ |  |  | 5751 |  |  | $\begin{array}{r} 115 \\ 71 \end{array}$ |  |  | $\begin{aligned} & 498 \\ & 414 \end{aligned}$ |  |  |
|  | Materials | Tork 10 Process | Fin sher Goods | Materisls | Hork in Process | Finished Goods | $\begin{gathered} \text { Rā̈ } \\ \text { Materials } \end{gathered}$ | Fork $1 n$ <br> Froces | P1n3 shed Goods | Materials | nory in Process | $\begin{aligned} & \text { FInI bred } \\ & \text { Goods } \end{aligned}$ |
|  | (numb | er of fl |  | (numb | of firm |  | (nu | ber of fi | ms) | (num | ber of Pi | rem) |
| Question? |  |  |  |  |  |  |  |  |  |  |  |  |
| Veluetion of Iaventory for Belance Sheets |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 115 | 125 | 118 | 25 | 24 | 27 | 36 | 28 | 28 | 176 | 176 | 173 |
| Lower-of-Cost or Merket ....................... | 180 | 126 | 157 | 26 | 11 | 15 | 28 | 17 | 27 | 235 | 154 | 199 |
| Market ........................................ | - | - | 5 | - | 1 | 3 | 2 | 2 | 2 | 2 | 5 | 10 |
| Other | 4 | 5 | 5 | - | 1 | 1 | 2 | 1 | 5 | 6 | 7 | 11 |
| Hot Applicable ................................ | - | 40 | 14 | - | 14 | 5 | 2 | 22 | 9 | 2 | 76 | 28 |
| Duplications ${ }^{\text {t }}$. ${ }^{\text {a }}$............................... | -7 | -2 | - 7 | - | - | - | - | - | - | 7 | -2 | -7 |
| TOTAL .................................... | 292 | 298 | 292 | 51 | 51 | 51 | 71 | 72 | 12 | 414 | 414 | 414 |
| Puestion 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| Definition of Costi | 11 | 3 | 3 | 3 | - | - | 15 | 1 | 2 | 29 | 4 | 5 |
| Laid down Cost ................................ | 248 | 24 | 22 | 47 | 2 | 6 | 48 | 9 | 6 | 345 | 36 | 34 |
| Standard Cost .................................. | 26 | 47 | 49 | 1 | 5 | 6 | 3 | 5 | 4 | 30 | 55 | 69 |
| Actual Masufactured Cost ..................... | - | 178 | 193 | - | 25 | 35 | 2 | 33 | 46 | 2 | 231 | 272 |
|  | 12 | - 17 | 17 | - | 3 | 4 | - | - | 4 | 12 | 20 | 25 |
| Kot 1pplicable ............................... | 1 | 40 | 21 | - | 16 | 8 | 3 | 25 | 9 | 4 | 81 | 35 |
| Duplications .................................. | -6 | -12 | -13. | - | - | -3 | - | - |  | -6 | -12 | -26 |
| TCTAL ..................................... | 292 | 292 | 292 | 51 | 51 | 51 | 71 | 71 | 11 | 414 | 414 | 414 |
| Question 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| Wthod of teralning Dunt Costs |  | 65 | 63 |  |  |  |  | 27 | 31 | 103 | 106 | 110 |
| First-in-First=0ut ................................... | 56 | 32 | 34 | 15 | 5 | 9 | 11 | 2 | 4 | 82 | 39 | 47 |
| Average Cost . . . . . . . . . . . . . . . . . . . . . . . . . | 163 | 113 | 140 | 20 | 10 | 14 | 17 | 14 | 28 | 200 | 137 | 179 |
| Last-in-P1rst-0at ............................. | 14 | 12 | 11 | 3 | 2 | 2 | 1 | 2 | 2 | 18 | 16 | 15 |
| Other .................. . . . . . . . . . . . . . . . . . . | 15 | 28 | 30 | 1 | 2 | 5 | 1 | 1 | 2 | 17 | 31 | 37 |
| Yot applicabl . .............................. | - | 46 | 18 | - | 16 | 6 | 6 | 25 | 10 | 6 | 87 | 35 |
| Duplicaty me................................... | -10 | -2 | -5 | -2 | - | -1 | - | - | -3 | -12 | -2 | -9 |
| tCTAl | 292 | 292 | 292 | 51 | 51 | 81 | 7 | 71 | 72 | 414 | 414 | 414. |
| Supplamontazy to Quastion 4 <br> Uthod or Celculating average Cont, Where Osed: |  |  |  |  |  |  |  |  |  |  |  |  |
| Yonthly Avertee $\because$......................... | 31 | 18 | 24 | \$ | 1 | 2 | 9 | 5 | 11 | 43 | 24 | 37 |
| Moring Average ................................ | 16 | 7 | 7 | 2 | 1 | 1 | 5 | 3 | 5 | 22 | 11 | 15 |
| Other ......................................... | 2 | 6 | 7 | - | 1 | 1 | 1 | 2 | 3 | 3 | 9 | 11 |
|  | 114 | 82 | 102 | 15 | 7 | 10 | 3 | 4 | 6 | 152 | 93 | 118 |
| Dupl1eations ................................... | - | - | - | - | - | - | - | - | - | $\cdots$ | - | - |
| TOTAL | 163 | 113 | 140 | 20 | 10 | 14. | 17 | 14 | 25 | 200 | 137 | 179 |
| Question 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| $\frac{\text { Camponants of Manufetured "Cost" }}{\text { Dirsct }}$ | - | 48 | 38 | - |  | 8 | - | 15 | 19 | - | 70 | 60 |
| Factory Orerhend, ex. lopreciation. | - | 204 | 245 | - | 30 | 28 | - | 36 | 45 | - | 270 | 318 |
| Depreciation .......... | - | 156 | 191 | - | 20 | 27 | - | 24 | 34 | - | 200 | 252 |
| Share of Administrativo Fxpmisors | - | 56 | 65 | - | 10 | 18 | - | 19 | 21 | - | 84 | 117 |
| Other .. | - | 14 | 20 | - | 3 | 3 | - | 2 | 2 | - | 19 | - 25 |
| Hot Applicablo .................................. | - | 40 | 14 | - | 14 | 5 | - | 20 | 7 | - | 74 | 26 |

* Sone firme roported under 2 or mors categorios.
- Eot all firms reportinf, average cost wero aked to pive this aupplomentery enslyain.


APPEND IX
SAUFLE SURTEY SCFEDULE

Confidentisl Report on
DVENTCRY ACCOUNTTN' METHODS

## File No.

MANUFACTUK ING<br>Dominion Bureau of Statistics Central Research and Develupment Staff

Please complete one copy of this report for each of your manufacturing plents and return on or before $\qquad$ - All replies will remain strictly confidential to The Bureau of Statistics and your report will not be available to any other government departnent. Additional copies of this form may be obtained on request.

```
Name of Business
*
Hesd Office Address
Industry covered by this report
```




1. (a) What was the date of your balance sheet for the fiscal year ending nearest December 31, 1947?
(b) What was the value of your inventory at that date,

Dollars

2. For balance sheet purposes for your fiscal year endinE nearest to Decomiter 3l. 1947, did you value your inventorias at chock whort applicable,

Raw Materials Goods in Process Finished Goods
(a) Cost
(b) Lower of cost or Market
(c) Other (please explain)
3. In determining cost did you arrive at it by using: check where applicable Raw Materials Goods in Process Finished Goods
(a) Invoice cost
(b) Laid down cost


(Invoice cost plus, duty, shipping and handling charges)
(c) Standard Cost
(d) Actual manufactured Cost
(e) Other (please expla in
4. In determining the unit cost figure to be used in euch case, did you arrive at it by using Raw Materials Goods in Process Finished Goods
(a) Specific Item Cost
(b) First-in-First-out
(c) Average Cost
(d) Last-In-First-Out
(e) Other (pleuse explain)

## SUPELEMENTARY TO QUESTION 4.

If you use averafe cost in your accounts, in which of the following ways was it calculated?

Raw Materials Goods in Frocess Finished Goods
(a) Monthly average (average of inventury value at beEinning of month plus new materials purchased or costs incurred during the month).
(b) Cumulative or moving average (same as in (a) except the average is recalculated each time additional materials are purcriased or incurred costs are transferred to the inventory account).
(c) Some other. (Please explain)
5. In determining your cost to manul'acture your various products, did you include therein in addition to direct labor and direct materials,

Goods in Frocess Finished Goods
(a) Factory Overhead other thar Depreciution
(b) Depreciation
(c) Share of administrative expenses
(d) Cther, such as interest on borrowed money (please specify)
6. If you used standard costs
(a) How of'ten have your standard costs been changed in the past ten yea: s?
(b) At what dates were they changed?
(c) What was the date of the last change?
(d) What was the reason for the change in each case?
7. In those instances where you used "market" did you take it to mean

Raw Matorials Goods in Process Finished Goods
(a) Replacernent cost through usual channels?
(b) Fstimuted selling price?
(c) Estimated selling, price less cost to sell and normal profit?
(d) Other? (pleaso explain)
Q. In हeneral, where you use "market" do you apply it to Raw Materials Goods in Process Finished Goods
(a) each specific item?
(b) major inventory divisions?
(c) your inventory as a whole?

$($
9. That is the percentage increase in the unit prices at wish the various items are included in your inventories? (five estimuted percentage incresse for each clussification set out below) (See Instructions)

With respect to your inventory at your balance sheet date nearest Dec. 31 , 1947, what was the

> Raw Materials Goous in Frocess Finished Goods

## (a) Percentage increase

 over the previous year(1) Percentage increase over 1939
10. nuve you any reserve for anticipated future declines in inventory values provided aguinst your inventories in your fiscal year ending nearest December 31. 1947? (Answer Yes or No for each category)

> Against or

Total Inventory only:
Against one or more of the following: Raw Naterials Goods in Process Finished Goods
11. If" the answer to (10) is "yos" in respect of any classification, huw wss the reserve set up?
(a) By separate amount shown on the balance sheet
(b) By separate umount not shown
on bulance sheet but deducted
in dotermining, figure or figures to be shown for invertories
(c) By percentage reduction of all or some classes of items (please explain)
(d) Other (please explain)
12. Or these two, wi.ich carries the most weicht in determining the selling price of your product, check one,
(a) Actual cost as shown by your records
(b) Replacement costs at current market price
13. In aetermining the materials to be taken into account for inventory valuation did you include, check where applicatie
(a) Materials in transit to you at the close of your fiscal period
(b) Materials in transit from you at the close of your f'iscal period
(c) Materials owned by you but in the hands of others on a consignment basis
(d) Materials owned by others but in your hands on a consignment tasis
14. What proportion of your production in 1547 consisted of
(a) Goods produced under binding orders
(b) Goods produced for inventory. (Orders filled out of finished goods inventory)
(c) Other (please explain)
15. What proportion of your inventory is hedged by the sale of options in ocmmodity markets?

Per cent
16. How, if at all, does the method used in valuing inventories for balance sheet purposes differ from the method used in reporting values of inventories on the Capital Schedule, Census of Industry. Dominion Bureau of Statistics? Descrthe below any major differences referring to the questions listed abuve by number.

Answer Yes or No
17. (a) Have you, in the past, followed a consistent policy in valuing your inventories?
(b) If no, describe briefly any major changes.
(c) Were any important changes made during the current year?
(d) If yes, please explain.

I herety certify that the information given on this report is complete and correct to the kest of my knowledge and belief.

Name and address of person making this report.

