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## Input-Output Division <br> Division des entrées-sorties



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DOCUMENTATION OF CAPITAL INPUTAND CAPITAL COST TIME SERIES FORMULTIFACTOR PRODUCTIVITY MEASURES

## DOCUMENTATION OF CAPITAL INPUT

AND CAPITAL COST TIME SERIES FOR MOLTIFACTOR PRODUCTIVITY MEASURES

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DOCUMENTATION OF CAPITAL INPUT AND CAPITAL COST TIME SERIES FOR MULTIFACTOR PRODUCTIVITY MEASURES

## PART I: CONCEPTS AND DEPINITIONS

Introduction:

The input-output tables are the bases on which multifactor productivity measures are calculated. The current price tables show for each industry, the value of intermediate goods and services used together with the values of goods and services produced. The constant price input-output tables present this same detail with values expressed in either $1961,1971,1981$ or 1986 prices.

The input tables in current prices include the values of "primary factors" of production, namely, payments made to labour (wages, salaries and supplementary labour income) and payments made to capital. The "other operating surplus" statistics of the input tables show the payments to capital of incorporated businesses. The "net income of unincorporated business" include the salaries of unincorporated business owners, and it is, therefore, an imperfect measure of the value of capital input in that it includes the payments to labour and to capital. Input tables in constant prices do not include data on the volume of capital services used by industries in a form that can be used in the estimation of multifactor productivity. It is therefore necessary for the
computation of multifactor productivity measures that both the current and the constant price input tables be extended to include the value and volumes of capital input used by industries. This involves constructing the following two series:

1. The volume (constant price) of capital service input for each industry;
2. The cost of capital services (the value of capital service input) for each industry.

For purposes of measuring multifactor productivity, the volume of capital input for each industry are confined to the total of fixed capital assets, namely to the total of structures and machinery and equipment. Estimates for services of other capital assets such as working capital, natural resources, inventories and land are not included in the volume of capital.

At present, the capital stock statistics in current and constant prices refer to the capital stock that industries "own". With the increase in capital and financial leasing activity in the 1970's and $1980^{\prime} \mathrm{s}$, and in order to attain consistency with production theory, capital input volume should be adjusted to refer to assets "used" rather than to assets "owned" by industries.

Data on current and constant price values of stock of fixed capital assets of canadian industries is obtained from various databases of the Investment and Capital Stock Division
(ICS) of Statistics Canada. ICS has published, under catalogue number 13-568, historical series on the stock of fixed capital and flows of capital investment for the $1936-1983$ period and annually publishes Catalogue 13-211 covering subsequent years. All series used for the multifactor productivity program are obtained from the same database which underlie annual estimates published in Catalogue 13-211, but are for more disaggregated asset type and industry breakdowns.

The capital stock estimates are calculated from data on investment by applying the perpetual inventory method. The method relies on four sets of information: investment in assets, expected lives of assets, price deflators, and depreciation patterns (for net stock) for each component of investment (i.e., group of assets such as Building Construction or Engineering Construction) and for each industry ${ }^{7}$.

The discard series used in the computation of net fixed capital formation are based on an assumption of gradual exit: assets are assumed to be discarded gradually and probabilistically (according to a truncated normal distribution). Discards begin at half the life of an asset, reach a peak at life and cease at one and a half life.

[^0]
## CAPITAL SERVICE COST

The principal difficulty in estimating the cost of capital in current prices is that, unlike intermediate commodities, it cannot be observed from market transactions when they are related to userowned capital assets. For this reason, a measure of the cost of capital services must be imputed. The imputation is made under some assumptions about what the firm would, or should, charge itself for using its own capital assets. The most commonly used assumption is the neoclassical long-run competitive equilibrium which implies that the cost of using capital services are equal to the income that can be generated from them given the conditions which prevail in each industry. More specifically, industry capital cost is computed as the sum of other operating Surplus and part of the Net Income of Unincorporated Businesses given in the curcent price input-output tables. This is an estimate of the compensation of owners of capital for the assets they have committed to production in that industry including the cost of capital depreciation. In order to compute gross capital income at cost to the industry, this residual value should also include indirect taxes associated with the industry's ownership and use of capital assets. These taxes, which appear as part of other Indirect Taxes in the input-output tables, are added to the above residual income to obtain gross capital income cost by industry.

The Input-Output tables estimates of Net Income of Unincorporated Businesses (NIUB) show the income for the unincorporated subset of each industry category. As mentioned, part of this income is compensation for labour input of entrepreneurs who are not paid an explicit income but share in the overall "contingent" earnings of the firm, including the appreciation of the value of the firm and its assets ${ }^{2}$. It is important to separate these components of business income for the unincorporated sector because they belong to different classes of primary inputs, namely to the cost of capital input and to the cost of labour input. In the computation of capital cost, an imputation for the total labour compensation of self-employed entrepreneurs is removed from NIUB and added to labour cost. This imputation is based on the assumption of a common average hourly income for the paid and the self-employed workers.

In summary, capital cost by industry is computed as other Operating surplus, the part of Other Indirect Taxes belonging to capital and Net Income of Unincorporated Businesses less an imputation for the labour income of self-employed (unincorporated business owners). The input-output value of Other operating Surplus includes the cost of capital depreciation (capital cost allowance).

[^1]
## CAPITAL SERVICE VOLUME

The volume of capital services used by an industry has traditionally been derived from data on the stock of capital assets in constant prices available to the industry. The most common solution to this problem, and the one adopted in the estimates of multifactor productivity, is to assume proportionality between the volume of stock of assets and the services which can be obtained from those assets. With constant proportionality between stock and flow of capital services, the growth rate of capital services are the same as the growth rate of the constant price stock of capital.

## Potential vs. actual

Measuring the flow of capital services volume for each industry as proportional to the constant price stock is a conventional method. The result, however, is a measure of the flow of services which are available and can potentially be used by the industry. The actual flow of capital services used by the industry depends on the rate, or intensity, of utilization of the productive capacity of the stock of capital. In fact, for most factors of production, the services actually obtained from them will differ from their maximum productive capacity when they are underutilized. Industries tend to underutilize factors, for instance, during unexpected periods of low demand which are typical of downswings of business cycles.

This situation presents two choices for the measurement of capital input: the potentially available flow of capital services for a given stock of capital assets, or a measure of services which is adjusted for the degree of utilization for each industry and time period. This choice was made in favour of using the potential capital service flow for essentially three reasons. First, the measure of capital input would not be consistent with measures of inputs of other factors of production, such as labour and intermediate goods, since they are not adjusted for degree of utilization. Second, measures of utilization are typically unsatisfactory for productivity measurement because they are not independent of the industry's productivity performance itself. Finally, measuring capital input by potential capital services incorporates into the resulting productivity estimates the gains and losses in production efficiency which result from different rates of utilization. This may be considered an advantage, because capacity utilization is subject to production decisions of businesses whose consequences for production efficiency is the purpose of productivity estimation.

## Gross vs. Net

Measuring capital input by changes in the level of constant price capital stock presents a further choice because the stock of assets can be measured either gross or net of depreciation. It is generally agreed that the proper capital stock for productivity
purposes is the net stock on grounds that the services of assets decay over time as the result of physical deterioration as well as technological obsolescence.

Unfortunately, there seems to be no consensus on the appropriate choice of net stock in the literature on production theory and productivity measurement. Some researchers have opted for a linear combination of the gross and net stock to estimate the true index of capital services. The issue here is whether a straight line, concave or convex depreciation curve should be used in the estimation of net capital stock for productivity measurement ${ }^{4}$. Estimates of multifactor productivity which have been published or otherwise released are based on the net measure of capital stock based on geometric depreciation (double declining balance method).

## Year-End vs. Mid-Year

Another choice concerns measures of year-end versus mid-year stock of capital in constant prices.

The ideal capital stock measure should represent the capital stock in use and usefully employed by industries in the production of output. The capital investment of projects with long gestation

[^2]lags are not included in the capital stock measure until the investment becomes productive. This occurs by allowing investment progress payments to be incorporated into usefull investment as the investment becomes productive. Therefore, a mid-year stock measure could be taken as a good approximation of the capital stock in use during a typical year for many industries. There are, however, many more industries engaged in capital projects in which no progress payments are reported but which nevertheless have a time delay between the time the investment is made and the start of production. For this reason, the net year-end capital stock in a given year is used to determine the capital input of the subsequent year.

## LINKS TO THE 1970 STANDARD INDUSTRIAL CLASSIFICATION (SIC)

Multifactor productivity measures should ideally be constructed for the most disaggregated set of industries. Since the Input-output "Link" level of aggregation contains the largest number of input-output industries for which consistent long time series could be obtained, it has been chosen for estimation of multifactor productivity measures. The "L" level industry breakdown consisting of 154 industries, has been further aggregated to 108 industries in order to concord with the capital investment and stock series which are based on the 1970 standard Industrial Classification. These 108 industries are the largest number of
industry groups for which alternative multifactor productivity measures can be developed with the existing database.

Capital assets for industry segments have been estimated, removed from some industry groups and reclassified to others so as to maximize the number of concordable industry classes (see Table at the end of next section). For greater reliability, this procedure has been limited to cases where the constant price capital stock of the industry segment in question is no larger than 50 percent of either the industry group from which it is removed or the group to which it is moved. Estimation of the gross and new stock of capital for each segment (outlined below) is based on the input and output information for the segment for the 1961-1981 period and on the following assumptions:

1. That the whole industry group and the segment in question have a common capital/output ratio. This allows to compute the stock values in current prices for the 1961-1981 period using the industry segments' output vectors;
2. That the whole industry group and the segment to be moved share a common set of investment price deflators. This allows to compute the segment's capital stock in constant prices; and
3. That for the remaining years, i.e. after 1981, the growth rate of the segment's net and gross end year capital stock can be approximated by that for the whole industry.

Constant price capital values for each industry segment were examined using alternative assumptions, including a common capital/employee relationship for the segment and the old (or new) classification and using energy input as a proxy for capital input. The three assumptions outlined above were maintained because the procedure yielded the most reliable results for most industry segments.

Stock values were estimated for five industry segments and their reclassification affected eight industries, as follows:

1. Food Specialty Stores:

To match Biscuit Industry (Link industry 21) and Bread and Other Bakery Products Industry (Link industry 22) with the capital stock data for SIC 107, it is necessary to remove from the latter the capital stock of SIC 10722, Food specialty Stores, Retail, for all time periods. At the same time, the removed stock should be added to that of the Retail Trade industry (Link industry 135). Over the 1961-1985 period, the estimated gross output of these establishments accounted for about $9 \%$ of the industry class to which they belonged prior to
reclassification and about $0.6 \%$ of the gross output of Retail Trade to which they were moved.

For this industry segment, the capital/output ratio used is the ratio of the 1970 SIC industry's capital stock vector to the sum of gross output of the segment and the $L$ level industry. The proxy used for extrapolation of the 1981 stock vector of the segment is the growth rate of the 1970 SIC industry's stock. Although it would have been more appropriate to use the capital stock growth rate of Retail Trade industry for this purpose, the latter is aggregated together with Wholesale Trade industry in the capital stock data base and makes it a poorer indicator of the growth rate of the industry segment than the rate of change of the 1970 SIC industry (Bakery Products Industry).
2. Plastic Parts and Accessories:

In order to concord the input and output data of Plastic Products Industry (Link industry 31) with the capital stock series of Plastic Fabricating Industries, N.E.S. (SIC 165), the latter should be augmented with the capital stock of Plastic Bag Industry (SIC 27332) while the stock belonging to Plastic Parts and Accessories for Motor Vehicle Industry (SIC 1652) must be moved to Motor Vehicle Parts and Accessories (Link industry 78).

The stock data for Plastic Parts and Accessories for Motor Vehicles (SIC 1652) is computed from the capital/output ratio of the industry group to which it was subsequently classified in the 1980 SIC, namely, Industry Group 62 in the industry table given below. The growth rates used for extrapolation are also for this group.

## 3. Plastic Bags Industry:

As mentioned in 2, above, this industry segment must be moved into Industry Group 18 (Primary Textile Industries). The stock data for this segment is estimated from capital/output ratio of Plastic Fabricating Industry, the industry where it was subsequently classified in the 1980 SIC, and extrapolated using this industry's trend for the $1982-86$ period. Note that 2 and 3 are performed independently, not simultaneously, to minimize estimation error. The Plastic Bag Industry constituted about $11 \%$ of the gross output of the Paper Box and Bag Industry where it was previously classified and about $18 \%$ of Plastic Products Industry's output between 1961 and 1981. The average output shares for this industry (SIC 1652) are 9\% (of Plastic Products Industry) and 3\% (of Motors Vehicles Parts and Accessories).
4. Upholstery and Repair Shops:

For Household Furniture Industry (Link industry 48), it is necessary to remove from the capital stock of SIC 261 that portion belonging to Upholstery and Repair Shops (SIC 2611) and to add this
to the capital stock of Retail Trade (Link industries 135 and 136). The estimated gross output of SIC 2611 was, on average, 78 of the Household furniture Industry and only $0.4 \%$ of Retail Trade.

The estimation of the capital stock vector of this industry is similar to the procedure used for Food Specialty stores. Since Retail and wholesale Trade industries are aggregated together, we take the capital output ratio of the 1970 SIC industry class where the segment was previously classified (Household Furniture Manufacturers) to be a better indicator of this segment's technology. The 1981 stock vector is extrapolated with the growth rate of the latter industry.
5. Photographic Developing and Printing:

The output and input detail of this industry segment was estimated for the historical revision of the tables in 1986 so that they could be removed from Link level industry 153 (Photographers) and added to Platemaking, Typesetting and Bindery (Link industry 56). It follows that the total gross output of the segment, needed for estimation of its associated capital stock, can be found as the difference between the old and the newly defined Link industry 56 for the 1961-81 period. Using the capital output of the industry to which the segment is moved and the gross output of the segment we estimate its vector of capital stock for the $1961-81$ period. Extrapolation and deflation of these values follow the procedures outlined for other industry*segments.

## SECTORING

Whereas the Standard Industrial Classification assigns all reporting units to industry classes by virtue of their major activity, the system of National Accounts industry classes refer only to those subsets of establishments (of each SIC) which meet the business sector criterion ${ }^{5}$. The problem of sectoring consists in defining various capital input time series which refer to the same statistical entities as those in the input-output tables.

Although these differences in classification systems in principle affect differences in statistical coverage and definition for all industries, they are known to cause significant differences in only a few industry groups. Community, Business and Personal Services Industries, for instance, includes schools, hospitals and certain health services whose definitions (the set of producing establishments intended to be included) in the System of National Accounts differ substantially from what is covered by their respective SIC's. For this group of industries, the Investment and capital stock Division has constructed special asset series which conform to the definition of business sector investment. These series are for two categories of private educational establishments, private hospitals, and for private health care
services. Other industries where significant sectoring differences are known to exist are:

1. Non-Metal Mines;
2. Chemical aṇ Chemical Products Industries;
3. Miscellaneous Manufacturing Industries;
4. Railway Transport and Related Services; and
5. Other Utility Industries, NEC.

For the first four industries, a common solution was developed and applied to obtain capital investment, depreciation and stock series, which excludes establishments not classified in the business sector. This procedure is explained below. The fifth industry, Other Utility Industries, was excluded from the business sector because methods applied to the above four industries would not yield adequately reliable estimates of capital assets and because most establishments classified to this industry are in the non-business sector ${ }^{6}$.

The solution adopted is to identify, in each of the above five industries, the investment of those establishments which do not belong in the business sector, and adjust downward the industry's investment series by asset type. The stock variables for the business sector subset of each industry is then obtained by

[^3]removing the capital stock values for the non-business segments implied by the perpetual inventory of these investment series in both current and constant prices.

In order to estimate the value of investments in current prices committed by establishments in the non-business sector of each industry category the following two series have been compared:

1. Final demand expenditures, for construction and for machinery and equipment commodities, separately presented in the Final Demand matrix of input-output tables; and
2. Investment series published annually in Fixed Capital Flows and Stocks (cat. 13-211) for construction capital and for machinery and equipment capital. In this database, construction capital expenditures are given by the sum of Building Construction and Engineering Construction investment series, whereas Machinery and Equipment investment and Capital Items Charged to operating Expenses are summed to represent total machinery and equipment expenditure.

Final demand values (machinery and equipment and construction capital items) in the current price input-output tables refer to investment expenditures by establishments which are part of the business sector. Furthermore, the investment submatrix is organized according to the $\cdot 1970$ SIC categories of the investing
business establishments. It follows that the difference between these expenditure series and the published Fixed Capital Formation series accounts for capital investments made by non-business establishments ${ }^{7}$. Given the price indices originally used to deflate these investments (published in Fixed Capital Flows and Stocks) and the expected lives of assets, both the current and constant price perpetual inventory of non-business capital assets are computed and removed from the stock values of each industry.

Gross fixed capital formation for the non-business part of an industry is deflated by using the same deflator as for the whole industry to obtain gross fixed capital formation in 1986 prices. Discards for the non-business part are assumed to be proportional to the ratio of gross fixed capital formation of non-business to total industry; therefore, the new methodology developed by ICS for discards (based on a truncated normal distribution) is implicitly taken into account. By substracting discards from gross fixed capital formation and cumulating over the years, gross capital stock is obtained for the non-business part.

In order to estimate net capital stock, the depreciation rate of the non-business part is assumed to be the same as the total

[^4]industry in each year. The depreciation rate is applied to gross capital stock estimated earlier in order to derive depreciation values in 1986 prices. Net investment in 1986 prices is obtained by removing depreciation from gross fixed capital formation also in 1986 prices. Net capital stock in 1986 prices of the non-business portion of an industry is obtained by cumulating net investments over the years.

## NOTE TO USERS:

Even though the programs hereby described calculate capital stock in current and constant prices, only constant price capital stock is used in the productivity data base. The current price capital stock data is produced for other uses. In the productivity data base, the value of capital input is calculated as explained in Capital Service cost above.

The constant price capital stock data produced by the programs described here differs from those in the constant price input matrix used in multifactor productivity in that in the latter, the observations are lagged one year.

## PART II: SYSTEMS DOCUMENTATION

## Introduction:

The systems documentation explains the features of the different programs used in constructing the capital input and capital cost time series for multifactor productivity measures. The system flow charts on the next pages illustrate the relationship among programs and data files. The first chart refers to the capital stock estimates using the double declining (geometric) depreciation while the second is the one corresponding to delayed depreciation.

Features:

Several features have been made to facilitate the access to the programs and assist the user while processing the data. In an attempt to avoid errors in reading the proper year while processing the data, each program has been devised to prompt the user.

Example: [FORTIN] FCFSC87.TRF
As the user processes this program
the computer will ask which year the user wants;

PLEASE ENTER YEAR WANTED (EX: 87)

The year refers to the last year wanted in the time series.

The computer will also prompt the user where the year variable must be adjusted.

```
Example: [FORTIN] SLIC6087.TRF
As the computer processes the data
    it encounters a line which requires a
    change in variable identifying the year
    wanted and asks the following;
```

ENTER VALUE EQUAL TO YEAR WANTED (EX: $87=118$, ETC.)

These prompts allow the user to chose the year wanted. This will be most helpful in the updating of all programs and avoids omissions or reading of wrong files while processing the data.

The following flow chart shows the processing steps and lists the programs used to calculate the capital input and capital cost time series. All files are [FORTIN] unless indicated otherwise.

The second flow chart shows the processing steps and lists the programs used to calculate the capital input and capital cost time series using the delayed depreciation.

SYSTEM FLOW CHART GEOMETRIC DEPRECIATION

*[IOUPDATE]

## SYSTEM FLOW CHART

DELAYED DEPRECIATION


For these prompts to be functional IT IS IMPORTANT to keep in mind when creating the original files from the Investment and Capital stock Division to identify these files with a name ending by the latest year.

Example: The current files are named as follows:
[FORTIN] C0187.RUF
[FORTIN] C0287.RUF

Another feature of the programs are verification matrices. These matrices are incorporated at strategic points of each program. The matrices present the data in a way that makes it easy for the user to compare it with reference documents such as the publication of Investment and Capital Stock Division.

Example: [FORTIN] FCFSC87.TRF
CHL. TMP: Presents the data (all components)
for the latest year specified
by the user.

Other matrix performs a check between two files within the programs of the processing cycle.

Example: [FORTIN] CAP6087C.TRF

> CC.TMP: Produces a matrix giving the difference between the first current or constant price file and the last file of the processing cycle.
[FORTIN] FCFSC87C.RUF-[FORTIN] CAP6087C.RUF

The resultant matrices CC.TMP, must contain only the Industries affected by the sectoring processing cycle which are:

1. Non-Metal Mines
2. Chemical and Chemical Products
3. Miscellaneaous Manufacturing
4. Railway transport and Communications

The verification matrices are provided to ensure that the calculation step is consistent with that of previous years.

When the computer generates the verification matrices it prompts the user asking if he/she wants the matrices printed or not.

Example:[FORTIN]CAP6087K.TRF DO YOU WANT TO PRINT VERIFICATION MATRIX (Y OR N)

In the past, the capital stock data in the CAP60XXC.RUF and CAP60XXK. RUF files were lagged one year. Beginning in August 1990, this is no longer the case. It has been decided that the lagging procedure would be done further in the process of the Multifactor Productivity Program. Therefore, both [FORTIN]CAP6087C.RUF \& [FORTIN]CAP6087K. RUF are not lagged, contrary of what has been done in the previous cycle where [SALEM]CAP6086K.TRF \& [SALEM]CAP6086C.TRF were lagged.

THE DATA:

The process of converting the data set from The Capital Stock Division is done by running e [BURROW]TESTCAP.EXE which extracts the data from [BURROW]NEWCAP90.DAT and creates the following [FORTIN]*87.RUF files:

| CURRENT PRICE | CONSTANT PRICE |
| :--- | :--- |
| FILE | FILE |


| C0187.RUF | K0187.RUF | Building \& Engineering Const. |
| :--- | :--- | :--- |
| C0287.RUF | K0287.RUF | Building Construction |
| C0387.RUF | K0387.RUF | Engineerging Construction |
| C0587.RUF | K0587.RUF | Machinery \& Equipment |
| C0787.RUF | K0787.RUF | Capital Items Charged other |
|  |  | Operating Expenses (CICOE) |
| C5087.RUF | K5087.RUF | Total All Components |

The industry dimension titleset for these files is CAPTEST.TTL. The time dimension is YR187020.TTL. The third dimension of these files is STOCK.TTL and reads as follows.
[SALEM]STOCK.TTL
1 GFCF Gross Fixed Capital Formation
2 DISC Discards

3 EYGS End-Year Gross-Stock
4 GCCA Geometric Capital Consumption Allowance
5 GEYNS Geometric End-Year Net Stock
6 LCCA Linear Capital Consumption Allowance
7 LEYNS Linear End-Year Net Stock
8 DCCA Delayed Capital Consumption Allowance
9 DEYNS Delayed End-Year Net Stock

The process of converting the data set from the capital stock Division has been altered to include an option that offers the user the choice of type of depreciation wanted such as;

```
1- Geometric (convex)
2- Delayed (concave)
```

When the processing of the investment and stock series obtained from the Capital Stock Division is done, the two initial files obtained are [FORTIN]FCFSC87.RUF AND [FORTIN]FCFSK87.RUF ${ }^{8}$ and have the following characteristics:

[^5]
## The Current price pile:

| Name: FCFSC87.RUF | Slic Titl:YR187020.Ttl 131 START YR:0 |
| :--- | :--- | :--- |
| Mode: INTEG | Row Title:Capind1.Ttl 142 |
| Format: compc | col Title:Capcom.Ttl 40 |

## The Constant 1986 Price File:

Name: FCFSK87.RUF Slic Titl:YR187020.Ttl 131
Mode: INTEG Row Title:Capind1.Ttl 142
Format: compc col Title:Capcom.Ttl 40
[SALEM] CAPIND1.TTL
1 AGRICULTURE 01000000
2 FISHING 03000000
3 FORESTRY 02000000
4 Metal Mines 0400001
5 Non-Metal Mines(Inc.Coal) 0400003
6 Mineral Fuels (Exc. Coal) 0400002
7 Quarries \& Sand Pits 0400004
8 Metal, Non-Metal Exploration 0400005
9 Meat and Poultry Products 0501101
10 Fish Prod. Ind. 0501102
11 Fruit \& Vegetable Processing 0501103
12 Dairy Prod. Ind. 0501104
13 Feed Ind. 0501106
14 Flour \& Breakfast Cereal 0501105
15 Miscellaneous Food Ind. NEC 0501108
16 Bakery Prod. Ind. 0501107
17 Beverage Ind. 0501109
18 Leaf Tobacco Processors 0502151
19 Tobacco Products Manuf. 0502153
20 Rubber Prod. Ind. 0503162
21 Shoe Factories 0504174
22 Plastic Fabricating Ind. NES 0503165
23 Leather Tanneries 0504172
24 Luggage, Handbag \& Small Leather 0504179

## [SALEM] CAPIND1.TTL

25 Cotton Yarn \& Cloth Mills ..... 0505181
26 Man-Made Fibre, Yarn \& Cloth Mills ..... 0505183
27 Wool Yarn \& Cloth Mills ..... 0505182
28 Cordage \& Twine Ind. ..... 0505184
29 Felt \& Fibre Processing Mills ..... 0505185
30 Canevas Prod, Cotton \& Jute Bags ..... 0505187
31 Misc. Textile Ind. ..... 0505189
32 Carpet, Mat \& Rug Ind. ..... 0505186
33 Leather Glove Factories34 Men's Clothing Ind.35 Women's Clothing Ind.36 Children's Clothing Ind.0504175
0507243
0507244
0507245
37 Fur Goods Ind. ..... 050724638 Foundation Garment Ind.
0507248
39 Misc. Clothing Ind. ..... 0507249
40 Knitting Mills ..... 0506239
41 Hosiery Mills ..... 0506231
42 Sawmills, Planing \& Shingle Mills ..... 0508251
43 Veneer \& Plywood Mills ..... 0508252
44 Sash, Door \& Other Millwork Plants ..... 0508254
45 Wooden Box Factories ..... 0508256
46 Coffin \& Casket Ind. ..... 0508258
47 Miscellaneous Wood Ind. ..... 0508259
48 Household Furniture Manuf. ..... 0509261
49 Office Furniture Mfrs. ..... 0509264
50 Misc. Furniture \& Fixture Mfrs ..... 0509266
51 Pulp \& Paper Mills ..... 0510271
52 Asphalt Roofing Mfrs. ..... 0510272
53 Paper Box \& Bag Mfrs ..... 0510273
54 Misc. Paper Converters ..... 0510274
55 Commercial Printing ..... 0511286
56 Publishing \& Printing ..... 0511289
57 Platemaking, Typesetting \& ..... 0511287
58 Iron \& Steel Mills ..... 0512291
59 Steel Pipe \& Tube Mills ..... 0512292
60 Iron Foundries ..... 0512294
61 Smelting \& Refining ..... 0512295
62 Aluminum Rolling, Casting and ..... 0512296
63 Copper \& Copper Alloy Rolling, ..... 0512297
64 Metal Rolling, Casting, Extruding ..... 0512298
65 Boiler \& Plate Works ..... 0513301
66 Fabricated Structural Metal Ind. ..... 0513302
67 Ornamental \& Arch. Metal Ind. ..... 0513303
68 Metal Stamping, Pressing \& ..... 0513304
69 Wire \& Wire Prod. Manuf. ..... 0513305
70 Hardware, Tool \& Cutlery Mfrs. ..... 0513306
71 Heating Equipment Mfrs ..... 0513307
[SALEM]CAPIND1.TTL
72 Machine Shops 0513308
73 Misc. Metal Fabricating 0513309
74 Agricultural Implement Ind. 0514311
75 Commercial Refrigeration \& Air 0514316
76 Misc. Machinery \& Equipment Mfrs 0514315
77 Air Craft \& Air Craft Parts Mfrs 0515321
78 Motor Vehicle Manufacturers
79 Truck \& Body \& Trailer Mfrs. 0515323

80 Automobile Fabric Acc. Ind.
0515324
81 Motor Vehicle Parts \& Acc. 0515325
82 Railroad Rolling Stock Ind. 0515326
83 Shipbuilding \& Repairs 0515327
84 Boatbuilding \& Repair 0515328
85 Misc. Vehicle Manufacturers 0515329
86 Manuf. of Small Electrical 0516331
87 Mfrs. of Major Appliances 0516332
88 Mfrs of Household Radio \& 0516334
89 Communications Equipment Mfrs. 0516335
90 Office \& Store Machinery Mfrs 0514318
91 Manuf. of Electric Wire \& Cable 0516338
92 Electric Lamp \& Shade Manuf. 0509268
93 Manufacturers of Light fixtures 0516333
94 Manuf. Electrical Industrial 0516336
95 Manuf. of Misc. Elec. Prod 0516339
96 Clay Prod. Mfrs. 0517351
97 Cement Mfrs. 0517352
98 Concrete Prod. Mfrs 0517354
99 Ready Mix Concrete Mfrs. 0517355
100 Glass \& Glass Prod. Mfrs. 0517356
101 Stone Products Mfrs. 0517353
102 Abrasives Mfrs. 0517357
103 Lime Mfrs. 0517358
104 Misc. Non-Metalic Mineral Prod. 0517359
105 Petroleum Refineries 0518365
106 Misc. Petroleum \& Coal Prod. 0518369
107 Mfrs. of Industrial Chemicals 0519378
108 Mfrs. of Plastic \& Synthetic Resin 0519373
109 Mfrs. of Pharmaceuticals \& 0519374
110 Paint \& Varnish Mfrs 0519375
111 Mfrs. of Soap \& Cleaning Compounds 0519376
112 Mfrs. of Toilet Preparations 0519377
113 Mfrs. of Mixed Fertilizers 0519372
114 Misc. Chemical Ind. 0519379
115 Jewellery \& Silverware Ind. 0520392
116 Sporting Goods \& Toy Ind. 0520393
117 Signs \& Display Ind. 0520397
118 Scientific \& Professional 0520391

## [SALEM] CAPIND1.TTL

119 Misc. Manufacturing Ind. NEC
0520399
120 CONSTRUCTION INDUSTRY
121 AIR TRANSPORT
122 RAILWAY TRANSP TELEG \& CABLE
123 TELEPHONE
124 WATER TRANSPORT
125 MOTOR TRANSPORT
126 URBAN \& SUBURBAN TRANSPORT
127 Highway \& Bridge Maintenance
128 PIPELINES
129 GRAIN ELEVATORS
130 other Storage \& Warehousing 07020527
131 BROADCASTING 07030543
132 Post office
133 Electric Power
07040572
134 Gas Distribution 07040574
135 TRADE
08000000
136 FINANCE, INS \& REAL ESTATE 09000000
137 COMMERCIAL SERVICES
138 Private Education 1
139 Private Education 2
10050899

140 Private Hospitals
10010805

141 Other Health Services
10010812
10020831
10020828
[SALEM]CAPCOM.TTL
1 GROSS FCF, TOTAL
2 GROSS FCF BUILDING CONSTRUCTION
3 GROSS FCF ENGINEERING CONSTRUCTION
4 GROSS FCF MACHINERY AND EQUIPMENT
5 GROSS FCF CICOE
6 NET FCF, TOTAL
7 NET FCF BUILDING CONSTRUCTION
8 NET FCF ENGINEERING CONSTRUCTION
9 NET FCF MACHINERY AND EQUIPMENT
10 NET FCF CICOE
11 CCA, TOTAL
12 CCA BUILDING CONSTRUCTION
13 CCA ENGINEERING CONSTRUCTION
14 CCA MACHINERY AND EQUIPMENT
15 CCA CICOE
16 GROSS M-Y STOCK, TOTAL
17 GROSS M-Y BUILDING CONSTRUCTION
18 GROSS M-Y ENGINEERING CONSTRUCTION
19 GROSS M-Y MACHINERY AND EQUIPMENT
20 GROSS M-Y CICOE
21 NET M-Y STOCK, TOTAL
22 NET M-Y BUILDING CONSTRUCTION
[SALEM]CAPCOM.TTL
23 NET M-Y ENGINEERING CONSTRUCTION
24 NET M-Y MACHINERY AND EQUIPMENT
25 NET M-Y CICOE
26 GROSS E-Y STOCK, TOTAL
27 GROSS E-Y BUILDING CONSTRUCTION
28 GROSS E-Y ENGINEERING CONSTRUCTION
29 GROSS E-Y MACHINERY AND EQUIPMENT
30 GROSS E-Y CICOE
31 NET E-Y STOCK, TOTAL
32 NET E-Y BUILDING CONSTRUCTION
33 NET E-Y ENGINEERING CONSTRUCTION
34 NET E-Y MACHINERY AND EQUIPMENT
35 NET E-Y CICOE
36 DISCARDS, TOTAL
37 DISCARDS BUILDING CONSTRUCTION
38 DISCARDS ENGINEERING CONSTRUCTION
39 DISCARDS MACHINERY AND EQUIPMENT
40 DISCARDS CICOE

The data retreived from the Capital Stock Division, once formatted as [FORTIN]FCFSC87.RUF \& [FORTIN]FCFSR87.RUF is then processed through the process illustrated by the Flow Chart. The result of this operation is contained in both [FORTIN]CAP6087C.RUP \& [FORTIN]CAP6087R.RUF which have the following characteristics:

## The Current price File:

| Name: CAP6087C.RUF | Slic Titl:YR6087.TTL | 28 |
| :--- | :--- | :--- | ---: |
| MODE: INTERG | ROW Title:PRODIND1.TTL | 109 |
| Format: COMPC | COL Title:CAPCOM2.TTL | 4 |

The Constant 1986 Price File:

Name: CAP6087K.RUF Slic बitl:YR6087.TTl 28

Mode: INTERG Row Title:PRODIND1.TTL 109
FORMAT:COMPC COl Title:CAPCOM2.TTL 4

## [SALEM] CAPCOM2.TTL

```
MID-YEAR GROSS STOCK
MID-YEAR NET STOCK
END-YEAR GROSS STOCK
END-YEAR NET STOCK
```

[SALEM]PRODIND1.TTL
1 AGRICULTURE
2 FISHING \& TRAPPING INDUSTRIES
3 FORESTRY
4 METAL MINES
5 NON-METAL MINES
6 MINERAL FUELS
7 QUARRYING, SAND PIT \& MINING SERVICES
8 MEAT \& POULTRY PRODUCTS
9 FISH PRODUCTS INDUSTRY
10 FRUIT AND VEGETABLE INDUSTRIES
11 DAIRY PRODUCTS INDUSTRIES
12 FEED INDUSTRY
13 MISC. FOOD PRODUCTS INDUSTRIES
14 BREAD \& OTHER BAKERY PRODUCTS IND.
15 BEVERAGE INDUSTRIES
16 TOBACCO PRODUCT INDUSTRIES
17 RUBBER \& FOOTWARE PRODUCT INDUSTRIES
18 PLASTIC PRODUCTS INDUSTRIES
19 LEATHER TANNERIES
20 MISC. LEATHER \& ALLIED PROD. IND.
21 MAN-MADE FIBRE YARN \& WOVEN CLOTH
22 WOOL YARN \& WOVEN CLOTH INDUSTRY
23 MISC. TEXTILE PRODUCTS INDUSTRIES
24 CARPET, MAT \& RUG INDUSTRY
25 CLOTHING INDUSTRIES EXC. HOSIERY
26 HOSIERY INDUSTRY
27 SAWMILLS, PLANING \& SHINGLE MILLS
28 VENEER AND PLYWOOD INDUSTRIES
29 SASH, DOOR \& OTHER MILLWORK IND.
30 WOODEN BOX \& COFFIN INDUSTRIES
31 OTHER WOOD INDUSTRIES
32 HOUSEHOLD FURNITURE INDUSTRIES
33 OFFICE FURNITURE INDUSTRIES
34 OTHER FURNITURE \& FIXTURE IND.
35 PULP \& PAPER INDUSTRIES
36 ASPHALT ROOFING INDUSTRY
37 PAPER BOX \& BAG INDUSTR 1 ES
38 OTHER CONVERTED PAPER PRODUCTS IND.
[SALEM] PRODIND1.TTL
39 PRINTING \& PUBLISHING IND.
40 PLATEMAKING, TYPESETTING \& BINDERY
41 PRIMARY STEEL INDUSTRIES
42 STEEL PIPE \& TUBE INDUSTRY
43 IRON FOUNDRIES
44 NON-FERROUS SMELTING \& REFINING IND
45 ALUMINUM ROLLING CASTING, EXTRUDING
46 COPPER ROLLING CASTING \& EXTRUDING
47 OTHER METAL ROLLING, CASTING ETC.
48 POWER BOILER \& STRUCT METAL IND.
49 ORNAMENTAL \& ARCH. METAL PROD. IND.
50 STAMPED, PRESSED \& COATED METALS
51 WIRE AND WIRE PRODUCTS INDUSTRIES
52 HARDWARE, TOOL \& CUTLERY INDUSTRIES
53 HEATING EQUIPMENT INDUSTRY
54 MACHINE SHOPS INDUSTRY
55 OTHER METAL FABRICATING INDUSTRIES
56 AGRICULTURE IMPLEMENT INDUSTRY
57 COMMERCIAL REFRIGERATION EQUIPMENT
58 OTHER MACHINERY \& EQUIPMENT IND.
59 AIRCRAFT \& AIRCRAFT PARTS INDUSTRY
60 MOTOR VEHICLE INDUSTRY
61 TRUCK, BUS BODY \& TRAILER INDUSTRY
62 MOTOR VEHICLE PARTS \& ACCESSORIES
63 RAILROAD ROLLING STOCK INDUSTRY
64 SHIPBUILDING AND REPAIR INDUSTRY
65 MISC. TRANSPORTATION EQUIPMENT IND.
66 SMALL ELECTRICAL APPLIANCE INDUSTRY
67 MAJOR APPLIANCES (ELEC \& NON-ELEC.)
68 RECORD PLAYERS, RADIO \& TV RECEIVER
69 ELECTRONIC EQUIPMENT INDUSTRIES
70 OFFICE, STORE \& BUSINESS MACHINES
71 COMMUNICATIONS, ENERGY WIRE \& CABLE
72 OTHER ELECT. \& ELECTRONIC PRODUCTS
73 CLAY PRODUCTS INDUSTRY
74 CEMENT INDUSTRY
75 CONCRETE PRODUCTS INDUSTRY
76 READY-MIX CONCRETE INDUSTRY
77 GLASS \& GLASS PRODUCTS INDUSTRIES
78 NON-METALIC MINERAL PRODUCTS NEC
79 REFINED PETROLEUM \& COAL PRODUCTS
80 INDUSTRIAL CHEMICALS INDUSTRIES NEC
81 PLASTIC \& SYNTHETIC RESIN INDUSTRY
82 PHARMACEUTICAL \& MEDICINE INDUSTRY
83 PAINT AND VARNISH INDUSTRY
84 SOAP \& CLEANING COMPOUNDS INDUSTRY
85 TOILET PREPARATIONS INDUSTRY
86 CHEMICAL \& CHEMICAL PROÐUCTS NEC
87 JEWELLERY \& PRECIOUS METAL IND.

## [SALEM] PRODIND1.TTL

88 SPORTING GOODS \& TOY INDUSTRIES
89 SIGN AND DISPLAY INDUSTRY
90 OTHER MANUFACTURING INDUSTRIES
91 CONSTRUCTION INDUSTRY
92 AIR TRANSPORT \& SERVICES INCIDENTAL
93 RAILWAY TRANSPORT
94 WATER TRANSPORT \& REL. SERVICES
95 TRUCK \& OTHER TRANSPORT INDUSTRIES
96 URBAN TRANSIT SYSTEM INDUSTRY
97 HIGHWAY \& BRIDGE MAINTENANCE IND.
98 PIPELINE TRANSPORT INDUSTRIES
99 STORAGE AND WAREHOUSING INDUSTRIES
100 TELECOMMUNICATION BROADCASTING IND.
101 ELECTRIC POWER SYSTEMS INDUSTRY
102 GAS DISTRIBUTION SYSTEMS INDUSTRY
103 WHOLESALE \& RETAIL TRADE INDUSTRIES
104 FINANCE REAL ESTATE \& INSURANCE IND
105 SERVICE INDUSTRIES
106 EDUCATIONAL SERVICES INDUSTRY
107 PRIVATE HOSPITALS
108 OTHER HEALTH SERVICES

VERIFICATION MATRICES

The following verification matrices were added to the processing programs:
[FORTIN]FCFSC87.TRF \& [FORTIN]FCFSK87.TRF

BB1.TMP: Industries \& Components 1987,
Published Data Millions of
Current/Constant \$

CHFK.TMP: End-Year Net Stock 61/89Published Data Millions of Current/Constant \$

CHB.TMP: All Industries \& Components 1987 Current/Constant

```
CC.TMP: Original data [FORTIN]FCFSC87.RUF/
    [FORTIN]FCFSK87.RUF minus final
    data [FORTIN]CAP6087C.RUF/
    [FORTIN]CAP6087K.RUF
```


## APPENDIX A

## Multifactor Productivity Industries

and Corresponding Link Level Industries

Multifactor productivity Industries Groups

Input-output Link Level Industries

1 AGRICULTURE

2 FISHING \& TRAPPING INDUSTRIES

3 FORESTRY
4 METAL MINES

5 NON-METAL MINES

6 MINERAL FUELS
7 QUARRYING, SAND PITS \& MINING SERV. 12

8 MEAT \& POULTRY PRODUCTS

9 FISH PRODUCTS INDUSTRY
10 FRUIT AND VEGETABLE INDUSTRIES
11 DAIRY PRODUCTS INDUSTRIES

12 FEED INDUSTRY
13 MISC. FOOD PRODUCT INDUSTRIES

14 BREAD \& OTHER BARERY PRODUCTS IND.

1 Agriculture \& Related Services Ind.

2 Fishing \& Trapping Ind.

4 Gold Mines
5 Iron Mines
6 Other Metal Mines
7 Asbestos Mines
8 Non-Metal Mines (Exc.coal \& Asbestos)
9 Salt Mines
10 Coal Mines
11 Crude Petroleum \& Natural Gas Quarry \& Sand Pit Ind. Services Related to Mineral Extr.

14 Meat \& Meat Products (Exc. Poultry) Poultry Products Ind. Fish Products Ind.

Fruit \& Vegetable Ind.
Dairy Prod. Ind.
19 Feed Ind.
Vegetable Oil Mills (Exc. Corn Oil)
Cane \& Beet Sugar Ind. Misc. Food Products Ind.

Biscuit Ind. Bread \& Other Bakery Prod. Ind. Soft Drink Ind.

|  | $\begin{aligned} & 26 \\ & 27 \\ & 28 \end{aligned}$ | Distillery Prod. Ind. Brevery Prod. Ind. Wine Industry |
| :---: | :---: | :---: |
| 16 TOBACCO PRODUCTS INDUSTRIES | 29 | Tobacco Prod. Ind. |
| 17 RUBEER FOOTWARE PRODUCTS IND. | $\begin{aligned} & 30 \\ & 33 \end{aligned}$ | Rubber Prod. Ind. Footwear Ind. |
| 18 PLASTIC PRODUCTS INDUSTRIES | 31 | Plastic Products Ind. |
| 19 LEATHER TANNERIES | 32 | Leather Tanneries |
| 20 MISC. LEATHER \& ALLIED PROD. IND. | 34 | Misc. Leather \& Allied Prod. Ind. |
| 21 MAN-MADE FIBRE YARN WOVEN CLOTH | 35 | Man-Made Fibre Yarn \& Woven Cloth |
| 22 WOOL YARN \& WOVEN CLOTH INDUSTRY | 36 | Wool Yarn \& Woven Cloth Ind. |
| 23 MISC. TEXTILE PRODUCTS INDUSTRIES | $\begin{aligned} & 38 \\ & 39 \end{aligned}$ | Misc. Textile Prod. Ind. Contract Textile Dyeing \& Finishing |
| 24 CARPET, MAT \& RUG INDUSTRY | 40 | Carpet, Mat \& Rug Ind. |
| 25 CLOTHING INDUSTRIES EXC. HOSIERY | $\begin{aligned} & 41 \\ & 37 \end{aligned}$ | Clothing Ind. Exc. Hosiery Broad Knitted Fabric Ind. |
| 26 HOSIERY INDUSTRY | 42 | Hosiery Ind. |
| 27 SAWMILLS, PLANING \& SHINGLE MILLS | 43 | Sawnills, Planing \& Shingle Mills |
| 28 VENEER AND PLYWOOD INDUSTRIES | 44 | Veneer \& Plywood Ind. |
| 29 SASH, DOOR \& OTHER MILLWORK IND. | 45 | Sash, Door \& Other Millwork Ind. |
| 30 WOODEN BOX \& COFFIN INDUSTRIES | 46 | Wooden Bax \& Coffin Ind. |
| 31 OTHER WOOD INDUSTRIES | 47 | Other Wood Ind. |
| 32 HOUSEHOLD FURNITURE INDUSTRIES | 48 | Household Furniture Ind. |
| 33 OFFICE FURNITURE INDUSTRIES | 49 | Office Furniture Ind. |
| 34 OTHER FURNITURE \& FIXTURE IND. | 50 | other Furniture \& Fixture Ind. |
| 35 PULP \& PAPER INDUSTRIES | 51 | Pulp \& Paper Ind. |
| 36 ASPHALT ROOFING INDUSTRY | 52 | Asphalt Roofing Ind. |
| 37 PAPER BOX \& BAG INDUSTRIES | 53 | Paper Box \& Bag Ind. |

38 OTHER CONVERTED PAPER PRODUCTS IND. 54 39 PRINTING \& PUBLISHING IND. 55 40 PLATEMAKING, TYPESETTING \& BINDERY 56 41 PRIMARY STEEL INDUSTRIES 57 42 STEEL PIPE \& TUBE INDUSTRY 58

43 IRON FOUNDRIES 59
44 NON-FERROUS SMELTING REFINING IND 60

45 ALUMINUM ROLLING CASTING, EXTRUDING 61

46 COPPER ROLLING CASTING \& EXTRUDING 62
47 OTHER METAL ROLLING, CASTING ETC. 63
48 POWER BOILER \& STRUCT. METAL IND. 64
49 ORNAMENTAL \& ARCH. METAL PROD. IND. 65
50 STAMPED, PRESSED \& COATED METALS 66
51 WIRE AND WIRE PRODUCTS INDUSTRIES 67
52 HARDWARE, TOOL \& CUTLERY INDUSTRIES 68
53 HEATING EQUIPMENT INDUSTRY 69
54 MACHINE SHOPS INDUSTRY 70
55 OTHER METAL FABRICATING INDUSTRIES 71
56 AGRICULTURE IMPLEMENT INDUSTRY 72
57 COMMERCIAL REFRIGERATION EQUIPMENT 73
58 OTHER MACHINERY \& EQUIPMENT IND. 74
59 AIRCRAFT \& AIRCRAFT PARTS INDUSTRY 75
60 MOTOR VEHICLE INDUSTRY 76
61 TRUCR, BUS BODY \& TRAILER INDUSTRY 77
62 MOTOR VEHICLE PARTS \& ACCESSORIBG

Other Converted Paper Prod. Ind. Printing \& Publishing Ind. Platemaking Typesetting \& Bindery Primary Steel Ind. Steel Pipe \& Tube Ind. Iron Foundries

Non-Ferrous Smelting \& Refining Ind.

Aluminium Rolling, Casting, Extruding

Copper Rolling, Casting \& Extruding Other Metal Rolling, Casting, etc. Power Boiler \& Struct. Metal Ind. Ornamental \& Arch. Metal Prod. Ind. Stamped, Pressed \& Coated Metals Wire \& Wire Prod.

Hardware, Tool \& Cutlery Ind.
Heating Equipment Ind.
Machine shops Ind.
other Metal Fabricating Ind.
Agriculture Implement Ind.
Commercial Refrigeration Equipment
other Machinery \& Equipment Ind.
Air Craft \& Air Craft Parts Ind
Motor Vehicle Industry
Truck, Bus Body \& Trailer Ind.
Motor Vehicle Parts \& Accessories

63 RAILROAD ROLLING STOCR INDUSTRY 79
64 SHIPBUILDING AND REPAIR INDUSTRY 80
65 MISC. TRANSPORTATION EQUIPMENT IND. 81
66 SMALL ELECTRICAL APPLIANCE INDUSTRY 82
67 MAJOR APPLIANCES (ELEC NON-ELEC.) 83
68 RECORD PLAYERS, RADIO TV RECEIVER 84

69 ELECTRONIC EQUIPMENT INDUSTRIES 85
70 OFFICE, STORE BUSINESS MACHINES
86
71 COMMUNICATIONS, ENERGY WIRE \& CABLE 87
72 OTHER ELECT. ELECTRONIC PRODUCTS 88

73 CLAY PRODUCTS INDUSTRY
74 CEMENT INDUSTRY
75 CONCRETE PRODUCTS INDUSTRY
76 READY-MIX CONCRETE INDUSTRY
77 GLASS \& GLASS PRODUCTS INDUSTRIES
78 NON-METALIC MINERAL PRODUCTS NEC
79 REFINED PETROLEUM \& COAL PRODUCTS 96

80 INDUSTRIAL CHEMICALS INDUSTRIES NEC 97
81 PLASTIC \& SYNTHETIC RESIN INDUSTRY 98
82 PHARMACEUTICAL MEDICINE INDUSTRY
83 PAINT AND VARNISH INDUSTRY
84 SOAP CLEANING COMPOUNDS INDUSTRY
85 TOILET PREPARATIONS INDUSTRY
86 CHEMICAL \& CHEMICAL PRODUCTS NEC
87 JEWELLERY \& PRECIOUS METAL IND.

Railroad Rolling Stock Ind. Shipwilding \& Repair Misc. Transportation Equipment Ind. Small Electrical Appliance Ind. Major Appliance (Elec. \& Non Elec.) Record Players, Radio \& TV Receivers

Electronic Equipment Ind. Office, Store \& Bus. Machines Commic, Energy Wire \& Cable Battery Ind. Other Electrical \& Electronic Prod. Clay Products Ind. Cement Ind.

Concrete Products Ind.
Ready Mix Concrete Ind.
Glass \& Glass Prod. Ind.
Non-Metalic Mineral Prod. NEC
Refined Petroleum \& coal Prod.
Industrial Chemicals Ind.
Plastic \& Synthetic Resin
Pharmaceutical \& Medicine Ind.
Paint \& Varnish Ind.
Soap \& Cleaning Compounds Ind.
Toilet Preparations Ind.
Chemical \& Chemical Products NEC
Jewellery \& Precious Metal Ind.

88 SPORTING GOODS \& TOY INDUSTRIES
89 SIGN AND DISPLAY INDUSTRY

90 OTHER MANUFACTURING INDUSTRIES NEC

91 CONSTRUCTION INDUSTRY

92 AIR TRANSPORT SERVICES INCIDENTAL 118
93 RAILWAY TRANSPORT \& TELECOMMUN.

94 WATER TRANSPORT REL. SERVICES
95 TRUCR \& OTHER TRANSPORT INDUSTRIES

96 URBAN TRANSIT SYSTEM INDUSTRY

97 HIGHWAY \& BRIDGE MAINTENANCE IND.
98 PIPELINE TRANSPORT INDUSTRIES
99 STORAGE AND WAREHOUSING INDUSTRIES
100 TELECOMM. BROADCASTING IND.
101 (not used)
102 ELECTRIC POWER SYSTEMS INDUSTRY

103 GAS DISTRIBUTION SYSTEMS INDUSTRY
104 WHOLESALE RETAIL TRADE IND.

105 FINANCE REAL ESTATE \& INS.
sporting Goods \& Toy Ind.
Sign \& Display Ind.
Floor Tile, Lineleum, Coated Fabric Other Manufacturing NEC

Repair Construction Residential Construction Non-Residential Building Const. Road, Highway \& Airstrip Const. Gas Oil Facility Const. Dams \& Irrigation Projects Railway \& Telephone \& Telegraph other Engineering Const. Construction, other Activities

Air Transport \& Services Incidental
Railway Transport \& Related Services
130 Telecommunication Carriers \& Others
120 Water Transport \& Related Services
121 Truck Transport Industries
123 Interurban \& Rural Transit Systems
125 Other Transport \& Services to Transp.

122 Urban Transit System Industry
126 Highway \& Bridge Maint. Ind.

135 Wholesale Trade Industries
136 Retail Trade Industries
137 Banks, Credit unions \& Other Deposit Institutions
138 Trust, othert Finance \& Real Estate


## APPENDIX B

## TRF PROGRAMS

```
A) FCFSC87.TRF
DEL *
/DEF YEAR\MESS=PLEASE ENTER YEAR WANTED(EX: 87)
```

-- PROGRAM TO BRING TOGETHER THE CAPITAL STOCK DATA FOR ---
--- MULTIFACTOR PRODUCTIVITY DATABASE ---
--- IN CURRENT PRICES ---
UPDATED BY RON FORTIN 28/09/90
—— AS C5O"?YEAR" ETC, TO BE PROPERLY PROCESSED
FCFSC"?YEAR" [YR187020;CAPIND1;CAPCOM] $=0 \backslash F I X \backslash N E W$
NC50"?YEAR" = TRANSP (NC50"?YEAR", 2, 3, 1)
NC03"?YEAR"=TRANSP (NC03"?YEAR", 2,3,1)
NC01"?YEAR"=TRANSP (NC01"?YEAR", 2,3,1)
NC05"?YEAR"=TRANSP (NC05"?YEAR", 2, 3, 1)
NCO2"?YEAR" =TRANSP (NCO2"?YEAR", 2, 3,1)
NCOT"?YEAR"=TRANSP (NC07"?YEAR", 2, 3,1)
FCFSC"?YEAR" $[; ; 1,36]=N C 50 " ? Y E A R "[; i 1 / 2]$
FCFSC"?YEAR" $[; ; 11]=N C 50 " ? Y E A R^{\prime \prime}[; ; 4]$
FCFSC"?YEAR" $[; ; 26,31]=N C 50 " ? Y E A R^{\prime \prime}[; ; 3,5]$
FCFSC"?YEAR" $[; ; 3,38]=N C O 3 " ? Y E A R "[; 1 / 2]$
FCFSC"?YEAR" $[; ; 13]=N C 03 " ? Y E A R "[; ; 4]$
FCFSC"?YEAR" $[; ; 28,33]=$ NC03"? $\operatorname{YEAR}^{\prime \prime}[; ; 3,5]$
FCFSC"?YEAR" $[; ; 4,39]=N C 05 " ? Y E A R "[; 1 / 2]$
FCFSC"?YEAR" $[; ; 14]=N C 05^{\prime \prime} ? Y E A R^{\prime \prime}[; ; 4]$
FCFSC"?YEAR" $[; 29,34]=N C 05 " ? Y E A R "[; ; 3,5]$
FCFSC"?YEAR" $[; ; 5,40]=$ NC07"?YEAR" $[; ; 1 / 2]$
FCFSC"?YEAR" $[; ; 15]=$ NC07"?YEAR" $[; ; 4]$
FCFSC"?YEAR" $[; ; 30,35]=\operatorname{NC07}{ }^{\prime \prime}$ ?YEAR" $[; ; 3,5]$
--- FOR INDUSTRIES WHERE BOTH THE BUILDING AND ENGINEERING DATASETS ---
--- ARE EMPTY SUBSTITUTE A THIRD DATASET AND PUT IT IN THE BUILDING ---
--- COLUMNS ---
PTN2 $=$ BOOLEQ (NCO2"?YEAR", 0)
PTN3=BOOLEQ (NC03"?YEAR", O)
PTN4 $=$ PTN $2+$ PTN 3
/DEL PTN2
/DEL PTN3
PTN5=BOOLEQ (PTN4, 2)
/DEL PTN4
CUR1P=NC01"?YEAR"*PTN5
/DEL PTN5
CUR1P2=CUR1P+NC02"?YEAR"
/DEL CURIP
FCFSC"?YEAR" [; ;2,37]=CUR1P2[;;1/2]

FCFSC"?YEAR" $[; ; 12]=C U R 1 P 2[; 4]$
FCFSC"?YEAR" $[; ; 27,32]=\operatorname{CUR} 1 P 2[; ; 3,5]$
/DEL CUR1P2
FCFSC"?YEAR" $[; ; 16]=(($ FCFSC"?YEAR" $[; ; 26]-\operatorname{DELTA}(F C F S C " ? Y E A R "[; ; 26], 2))+$ FCFSC"?Y\&
EAR" $\left[;\right.$; $^{26]) / 2}$
FCFSC"?YEAR" $[; 17]=\left(\left(F C F S C^{\prime \prime} ? Y E A R^{\prime \prime}[; ; 27]-\operatorname{DELTA}\left(F C F S C " ? Y E A R{ }^{\prime \prime}[; ; 27], 2\right)\right)+\right.$ FCFSC"?Y\&
EAR" $[$; ; 27])/2
FCFSC"?YEAR" $[; ; 18]=\left(\left(F C F S C " ? Y E A R "[; 28]-D E L T A\left(F C F S C " ? Y E A R^{\prime \prime}[; ; 28], 2\right)\right)+\right.$ FCFSC"?Y\&
EAR" [; ; 28])/2
FCFSC"?YEAR" $[; ; 19]=((\operatorname{FCFSC}$ "?YEAR" $[; ; 29]-\operatorname{DELTA}(F C F S C " ? Y E A R "[; ; 29], 2))+$ FCFSC"?Y\&
EAR"[; ;29])/2
FCFSC"?YEAR" $[; ; 20]=(($ FCFSC"?YEAR" $[; ; 30]-\operatorname{DELTA}(F C F S C " ? Y E A R "[; ; 30], 2))+$ FCFSC"?Y\&
EAR" $[; ; 30]) / 2$
FCFSC"?YEAR" $[; ; 21]=(($ FCFSC"?YEAR" $[; ; 31]-\operatorname{DELTA}(F C F S C " ? Y E A R "[; ; 31], 2))+$ FCFSC"?Y\&
EAR" $[$; 31$]$ )/2
FCFSC"?YEAR" $[; ; 22]=(($ FCFSC"?YEAR" $[; ; 32]-\operatorname{DELTA}(F C F S C " ? Y E A R "[; ; 32], 2))+$ FCFSC"?Y\&
EAR" $[$; ; 32])/2
FCFSC"?YEAR" $[; ; 23]=((F C F S C " ? Y E A R "[; ; 33]-D E L T A(F C F S C " ? Y E A R "[; ; 33], 2))+$ FCFSC"?Y\&
EAR"[; 33$]$ )/2
FCFSC"?YEAR"[; ;24]=((FCFSC"?YEAR"[; 34]-DELTA(FCFSC"?YEAR"[;;34],2)) + FCFSC"?Y\&
EAR"[; ;34])/2
FCFSC"?YEAR" $[; ; 25]=\left(\left(F C F S C\right.\right.$ "?YEAR" $\left.[; ; 35]-\operatorname{DELTA}^{\prime \prime}\left(F C F S C " ? Y E A R^{\prime \prime}[; ; 35], 2\right)\right)+$ FCFSC"?Y\&
EAR" $[$; $; 35]) / 2$
FCFSC"?YEAR" $[; ; 6]=$ FCFSC"?YEAR" $[; 1]-\operatorname{FCFSC"?YEAR"[;~} 11]$
FCFSC"?YEAR" $[; ; 7]=$ FCFSC"?YEAR" $[; ; 2]-F C F S C " ? Y E A R "[; ; 12]$
FCFSC"?YEAR" $[; ; 8]=\operatorname{FCFSC}$ "?YEAR" $[; ; 3]$-FCFSC"?YEAR" $[; ; 13]$
FCFSC"?YEAR"[; ;9]=FCFSC"?YEAR"[; $; 4]$-FCFSC"?YEAR" $[; 14]$
FCFSC"?YEAR" $[; ; 10]=$ FCFSC"?YEAR" $[; ; 5]-F C F S C " ? Y E A R "[; ; 15]$
!
PLEASE VERIFY THE FOLLOWING PRINTOUTS -BB1 \& CHK.LIS-WITH
THE PUBLICATION OF THE INVESTMENT \& CAPITAL STOCK DIVISION
DATA SHOULD BE IDENTICAL TO PUBLISHED DATA
! CHECK BEFORE PRINTING FCFSC"?YEAR".RUF
BB=AGG (FCFSC"?YEAR", CAPIND1, COMM7A)
$\mathrm{BB} 1=\mathrm{BB}[118 ; ; 1,11,26,31,36]$
!---NOTE ORIGINAL FILE / 1000 BEING PUB IS IN MILLIONS OF \$--
$\mathrm{BB} 1=\mathrm{BB} 1 / 1000$
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFACTION MATRIX
\$IF (PRINT=1)
/PRINT BBI\DES=IND \& COMPONENTS 19"?YEAR" ALL IND ALL COMP. CURRENT \$\QUE

```
$ENDIF
!--NOTE YEARS 1961-1990 AVAILABLE ON CANSIM--
CHC=AGG (FCFSC"?YEAR",CAPIND1,COMM7A)
CHK=CHC[92/120;;31]
CHK=TRANSP(CHK,1,2,3)
CHK=CHK / 1000
/PROMPT PRINT\MESS= DO YOU WANT TO PRINT VERIFICATION MATRIX (ENTER Y OR N)
$IF (PRINT=1)
/PRINT CHK\DES=END-YEAR NET STCK 61-89 PUBLISHED DATA &
MILLIONS OF CURRENT $\DEC=1\QUE
$ENDIF
! FOLLOWING PRINT OUT IS ALL COMPONENTS
! ALL INDUSTRIES FOR 19"?YEAR"
CHL=CHC[117; ]
CHL=NEAT (CHL)
CHL=CHL/1000
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX (Y OR N)
$IF (PRINT=1)
/PRINT CHL\DES=ALL IND. ALL COMP. 19"?YEAR" &
CURRENT $\DEC=1\QUE
$ENDIF
FCFSC"?YEAR".RUF=FCFSC"?YEAR"\REP\&
DES=FIXED CAPITAL FLOWS AND STOCKS, CURRENT PRICES, OFFICIAL, OCT 1990
```


## B) FCFSX87.TRE

/DEL
/DEF YEAR $M$ MESS=PLEASE ENTER YEAR WANTED (EX: 87)

```
                                    --- FCFSK"?YEAR".TRF ---
```

--- PROGRAM TO BRING TOGETHER THE CAPITAL STOCK DATA FOR ------ THE MULTIFACTOR PRODUCTIVITY DATABASE --IN CONSTANT PRICES ---

FCFSK"?YEAR" [YR187020;CAPIND1;CAPCOM]=0\FIX
NK50"?YEAR"=TRANSP (NK50"?YEAR", 2,3,1)
NK03"?YEAR"=TRANSP (NK03"?YEAR", 2,3,1)
NK07"?YEAR"=TRANSP (NK07"?YEAR", 2,3,1)
NK01"?YEAR"A=TRANSP (NK01"?YEAR"A, 2,3,1)
NK05"?YEAR"=TRANSP (NK05"?YEAR", 2,3,1)
NK02"?YEAR"=TRANSP (NK02"?YEAR", 2, 3,1)
FCFSK"?YEAR" [; ;1,36]=NK50"?YEAR" $[; 1 / 2]$
FCFSK"?YEAR"[; ;11]=NK50"?YEAR" [; ; 4]
FCFSK"?YEAR" $[; ; 26,31]=$ NK50"?YEAR" $[; ; 3,5]$
FCFSK"? YEAR"[;;3,38]=NK03"?YEAR" [; ;1/2]
FCFSK"?YEAR" [; ;13]=NK03"?YEAR" [; ; 4]
FCFSK"?YEAR" $[; ; 28,33]=$ NK03"?YEAR" $[; ; 3,5]$
FCFSK"?YEAR"[; 4, 39]=NK05"?YEAR"[;;1/2]
FCFSK"?YEAR"[;;14]=NK05"?YEAR" $[; ; 4]$
FCFSK"?YEAR" $[; ; 29,34]=$ NK05"?YEAR" $[; ; 3,5]$
FCFSK"?YEAR" $[; ; 5,40]=$ NK07"?YEAR" $[; ; 1 / 2]$
FCFSK"?YEAR" $[; ; 15]=$ NK07"?YEAR" $[;$; 4]
FCFSK"?YEAR" $[; ; 30,35]=$ NK07"?YEAR" $[; ; 3,5]$
-- FOR INDUSTRIES WHERE BOTH THE BUILDING AND ENGINEERING DATASETS --- ARE EMPTY SUBSTITUTE A THIRD DATASET AND PUT IT IN THE BUILDING - -
--- COLUMNS ---
PTN2=BOOLEQ(NK02"?YEAR", 0)
PTN3=BOOLEQ (NK03"?YEAR", 0)
PTN4 $=$ PTN2 + PTN3
/DEL PTN2
/DEL PTN3
PTN5=BOOLEQ (PTN4, 2)
/DEL PTN4
CON1P=NK01"?YEAR"A*PTN5
/DEL PTNS
CON1P2=CON1F'NK02"?YEAR"
/DEL CON1P
FCFSK"?YEAR" $[; ; 2,37]=\operatorname{CON1P2}[; ; 1 / 2]$
FCFSK"?YEAR" [; ;12]=CON1P2[; ; 4]
FCFSK"?YEAR" [; ; 27,32]=CON1P2[; 3,5$]$
/DEL CON1P2
FCFSK"?YEAR"[;;16]=((FCFSK"?YEAR"[;;26]-DELTA(FCFSK"?YEAR"[;;26],2)) +

FCFSK"?Y\&
EAR" [; ; 26])/2
FCFSK"?YEAR" $[; 17]=((F C F S K " ? Y E A R "[; 27]-\operatorname{DELTA}(F C F S K " ? Y E A R "[; 27], 2))+$ FCFSK"?Y\&
EAR" [; ; 27])/2
FCFSK"?YEAR"[; 18]=((FCFSK"?YEAR"\{;;28]-DELTA(FCFSK"?YEAR"[; ;28],2)) + FCFSK"?Y\&
EAR" [; ; 28])/2
FCFSK"?YEAR"[;i19]=((FCFSK"?YEAR"[;;29]-DELTA(FCFSK"?YEAR"[;;29],2)) + FCFSK"?Y\&
EAR" (; ; 29])/2
FCFSK"?YEAR" $[; ; 20]=(($ FCFSK"?YEAR" $[; ; 30]-\operatorname{DELTA}(F C F S K " ? Y E A R "[; ; 30], 2))+$ FCFSK"?Y\&
EAR" $[; ; 30]) / 2$
FCFSK"?YEAR" $[; ; 21]=((\operatorname{FCFSK} " ? Y E A R "[; ; 31]-\operatorname{DELTA}(F C F S K " ? Y E A R "[; ; 31], 2))+$ FCFSK"?Y\&
EAR" $\left.\left(;{ }^{\prime} 1\right]\right) / 2$
FCFSK"?YEAR"[; 22$]=((\operatorname{FCFSK} " ? Y E A R "[; ; 32]-D E L T A(F C F S K " ? Y E A R "[; ; 32], 2))+$ FCFSK"?Y\&
EAR" [; ;32])/2
FCFSK"?YEAR"[; 23]=((FCFSK"?YEAR" $[; ; 33]$-DELTA $(F C F S K " ? Y E A R "[; ; 33], 2))+$ FCFSK"?Y\&
EAR" $[; ; 33]) / 2$
 FCFSK"?Y\&
EAR" $[; ; 34]) / 2$
FCFSK"?YEAR" $[; ; 25]=\left(\left(\right.\right.$ FCFSK"?YEAR" $\left.[; ; 35]-\operatorname{DELTA}^{\prime \prime}\left(F C F S K " ? Y E A R^{\prime \prime}[; ; 35], 2\right)\right)+$ FCFSK"?Y\&
EAR" $[; ; 35]) / 2$
FCFSK"?YEAR" $[; ; 6]=F C F S K " ? Y E A R^{\prime \prime}[; ; 1]-F C F S K " ? Y E A R^{\prime \prime}[; ; 11]$
FCFSK"?YEAR" [; ; 7]=FCFSK"?YEAR" [; ;2]-FCFSK"?YEAR"[; ;12]
FCFSK"?YEAR" [; ; 8]=FCFSK"?YEAR" [; 3]-FCFSK"?YEAR"[; 13$]$
FCFSK"?YEAR" [; ;9]=FCFSK"?YEAR" [; ;4]-FCFSK"?YEAR"[; ;14]
FCFSK"?YEAR" $[; 10]=$ FCFSK"?YEAR" $[; ; 5]$-FCFSK"?YEAR" $[; 15]$
--- INVENTORY THE CONSTANT PRICE DATA ---
CHECK FOLLOWING LISTING -BB1 \& CHFK.LIS- WITH PUBLICATION FROM
! CAPITAL STOCK DIVISION, DATA SHOULD BE IDENTICAL WITH
! PUBLISHED DATA
BB=AGG (FCFSK"?YEAR", CAPIND1, COMM7A)
$\mathrm{BB} 1=\mathrm{BB}[118 ; ; 1,11,26,31,36]$
! ORIGINAL FILE / 1000 TO REFLECT PUB DATA IN MILLIONS OF \$
$\mathrm{BB} 1=\mathrm{BB} 1 / 1000$
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX (Y OR N) \$IF (PRINT=1)
/PRINT BBI\DES=INDUSTRIES \& COMPONENTS 19"?YEAR", PUBLISHED DATA \& MILLIONS OF **CONSTANT $\$ * * \backslash D E C=1$ QUE \$ENDIF
CHC=AGG (FCFSK"?YEAR", CAPIND1, COMM7A)
$\mathrm{CHC}=\mathrm{CHC} / 1000$
CHFK $=\mathrm{CHC}[92 / 120 ; 31]$

```
CHFK=TRANSP(CHFK,1,2,3)
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX (ENTER Y OR N)
$IF (PRINT=1)
/PRINT CHFK\DES=END-YEAR NET STOCK 61-89 -PUBLISHED DATA &
MILLIONS OF *CONSTANT $**\DEC=1\QUE
$ENDIF
! FOLLOWING PRINT OUT IS ALL COMPONENTS ALL INDUST. FOR 1986
CHB=CHC[118;;]
CHB=NEAT (CHB)
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX (ENTER Y OR N)
$IF (PRINT=1)
/PRINT CHB\DES=ALL IND ALL COMP. 19"?YEAR" **CONSTANT $**\DEC=1\QUE
$ENDIF
FCFSK"?YEAR".RUF=FCFSK"?YEAR"\REP\&
DES=FIXED CAPITAL FLOWS AND STOCKS, CONSTANT PRICES, AS OF OCT 1990
```


## C) SLIC6087.TRF

```
/DEL *
/DEF YEAR\MESS=ENTER LAST YEAR WANTED(EX: 87)
!
!
!
OUT6180=AGG (OU6181W70['1961/'1980;IOIW70.TTL=1/190;],2,IOIW7OL)
OUT81=AGG(OU8185W80['1981;IOIW80.TTL=1/216;],2,IOIW80L)
OUT82"?YEAR"=AGG(OU81"?YEAR"W80['1982/'19"?YEAR";IOIW80.TTL=1/216;],2,IOIW80L)
OUT61"?YEAR"L[YR61"?YEAR"; ;]=OUT6180;OUT81;OUT82"?YEAR"\SLICE
/DEL OUT6180
/DEL OUT81
/DEL OUT82"?YEAR"
*** GENERATING CAPITAL STOCK PRICE DEFLATORS ***
*** AT THE CAPIND1 LEVEL FOR 1961-86 ***
/DEF YEAR2\MESS=ENTER VALUE EQUAL TO YEAR WANTED (EX; 87=118, ETC.)
C=RETITLE(FCFSC"?YEAR"[92/"?YEAR2"; ;16/35],YR61"?YEAR",CAPIND1,KSTOCKS)
K=RETITLE(FCFSK"?YEAR"[92/"?YEAR2";;16/35],YR61"?YEAR",CAPIND1,KSTOCKS)
CAPP=C/K
!
! *** 1. FOOD SPECIALTY STORES ***
!
OU14=RETITLE (SUM(SUM(OUT61"?YEAR"L[1/21;21/22;],2),1),YR6181,.)
COR14=RETITLE(FCFSC"?YEAR"[92/112;16;16/35],YR6181, ,)*1/(OU14&
+SUM(TRANSP(ZNOUT107X, 1, 3,2),1))
C1SLICE14=RETITLE(COR14*(SUM(TRANSP(ZNOUT107x,1,3,2),1)),YR6181,,KSTOCKS)
DD=FCFSC87[92/112;16;16/35]
000=FCFSC[92/112;16;16/35]
C2SLICE14=DELTA(LOG(FLOAT(FCFSC"?YEAR"[111/"?YEAR2";16;16/35])),3)
C3SLICE14=C1SLICE14[21;;]*(1+RETITLE(C2SLICE14,.,NSTOCKS))
/DEF YEAR3\MESS=ENTER VALUE EQUAL TO YEAR WANTED (EX:87=8, ETC)
CSLICE14=RETITLE((C1SLICE14;C3SLICE14[3/"?YEAR3";;]),YR61"?YEAR",,KSTOCKS)
KSLICE14=CSLICE14/CAPP[;16;]
!
END
!
!
OU62=RETITLE (SUM(OUT61"?YEAR"L[1/21;78;],1),YR6181, )
COR62=RETITLE(SUM(FCFSC"?YEAR"[92/112;80,81;16/35],2),YR6181,,)*1/(OU62)
C1SLICE62=RETITLE(COR62* (SUM(TRANSP (ZNOUT3256,1,3,2),1)),YR6181, ,KSTOCKS)
C2SLICE62=DELTA(LOG(FLOAT(SUM(FCFSC"?YEAR"[111/"?YEAR2";80,81;16/35],2))),3)
C3SLICE62=C1SLICE62[21;;]*(1+RETITLE(C2SLICE62,.,KSTOCKS))
CSLICE62=RETITLE((C1SLICE62;C3SLICE62[3/"?YEAR3";i]),YR61"?YEAR",,KSTOCKS)
```

```
PSLICE62=SUM(C[;80,81;],2)/SUM(K[;80,81;],2)
KSLICE62=CSLICE62/PSLICE62
!
END
! *** 3. PLASTIC BAGS INDUSTRY
!
OU18=RETITLE(SUM (OUT61"?YEAR"L[1/21;31;],1),YR6181,.)
COR18=RETITLE (SUM(FCFSK"?YEAR"[92/112;22;16/35],2),YR6181,,)*1/(OU18)
C1SLICE18=RETITLE (COR18*(SUM(TRANSP(2NOUT1691,1,3,2),1)),YR6181,,KSTOCKS)
C2SLICE18=DELTA(LOG(FLOAT(FCFSK"?YEAR"[111/"?YEAR2";22;16/35])),3)
C3SLICE18=C1SLICE18[21;i]*(1+RETITLE(C2SLICE18,.,KSTOCKS))
CSLICE18=RETITLE((C1SLICE18;C3SLICE18[3/"?YEAR3";;]),YR61"?YEAR",,KSTOCKS)
KSLICE18=CSLICE18/CAPP[;22;]
!
END
!
!
OU32=RETITLE(SUM(OUT61"?YEAR"L[1/21;48;],1),YR6181,.)
COR32=RETITLE(FCFSC"?YEAR"[92/112;48;16/35],YR6181,,)*1/(OU32&
+SUM(TRANSP (ZNOUT2611,1,3,2),1))
C1SLICE32=RETITLE (COR32*(SUM(TRANSP(2NOUT2611,1,3,2),1)),YR6181,,KSTOCKS)
C2SLICE32=DELTA(LOG(FLOAT(FCFSC"?YEAR"[111/"?YEAR2";48;16/35])),3)
C3SLICE32=C1SLICE32[21;;]*(1+RETITLE(C2SLICE32, ,,KSTOCKS))
CSLICE32=RETITLE((C1SLICE32|C3SLICE32[3/"?YEAR3";;]),YR61"?YEAR", ,KS̄TOCKS)
KSLICE32=CSLICE32/CAPP[;48;]
!
END
! *** 5. PHOTOGRAPHIC SERVICES, DEVELOPING AND PRINTING ***
*** COMPUTATION OF THE GROSS OUTPUT OF THE PHOTOGRAPHIC SERVICES ***
*** INDUSTRY SEGMENT TO ESTIMATE CAPITAL STOCK SLICE ***
*** FOR INDUSTRY GROUP 40 ***
!
OU8932=SUM((OU6181W70[;74;]-OUT6181[;74;]),1)
OU40=RETITLE (SUM (OUT61"?YEAR"L[1/21;56;],1), YR6181,,)
COR40=RETITLE(FCFSC"?YEAR"[92/112;57;16/35],YR6181, )*1/OU40
C1SLICE40=RETITLE ((COR40*OU8932),YR6181,,KSTOCKS)
C2SLICE40=DELTA(LOG(FLOAT(FCFSC"?YEAR"[111/"?YEAR2";57;16/35])),3)
C3SLICE40=C1SLICE40[21;;]*(1+RETITLE(C2SLICE40,.,KSTOCKS))
CSLICE40=RETITLE ((CISLICE40;C3SLICE40[3/"?YEAR3";;]),YR61"?YEAR",,KSTOCKS)
KSLICE40=CSLICE40/CAPP[;57;]
!
END
!
!
PSLICEC[YR60"?YEAR";PRODIND1;CAPCOM]=0\FLOAT
PSLICEK[YR60"?YEAR";PRODIND1;CAPCOM]=0\FLOAT
Y=RETITLE(PSLICEC[1;1;16/35],,,KSTOCKS)
COM1=PSLICEC[;1;1/15]
COM2=PSLICEC[;1;36/40]
CSLICE14=Y;CSLICE14
CSLICE14=RETITLE(CSLICE14,YR60"?YEAR", ,KSTOCKS)
```

```
CSLICE14=RETITLE((COM1;CSLICE14;COM2),YR60"?YEAR",,CAPCOM)
CSLICE18=Y;CSLICE18
CSLICE18=RETITLE(CSLICE18,YR60"?YEAR",,KSTOCKS)
CSLICE18=RETITLE ((COM1;CSLICE18;COM2),YR60"?YEAR", CAPCOM)
CSLICE32=Y|CSLICE32
CSLICE32=RETITLE(CSLICE32,YR60"?YEAR",,KSTOCKS)
CSLICE32=RETITLE ((COM1;CSLICE32;COM2),YR60"?YEAR",,CAPCOM)
CSLICE40=Y;CSLICE40
CSLICE40=RETITLE(CSLICE40,YR60"?YEAR", ,KSTOCKS)
CSLICE40=RETITLE((COM1;CSLICE40;COM2),YR60"?YEAR", ,CAPCOM)
CSLICE62=Y!CSLICE62
CSLICE62=RETITLE(CSLICE62,YR60"?YEAR", ,KSTOCKS)
CSLICE62=RETITLE((COM1;CSLICE62;COM2),YR60"?YEAR", CAPCOM)
KSLICE14=Y; KSLICE14
KSLICE14=RETITLE(KSLICE14,YR60"?YEAR",,KSTOCKS)
KSLICE14=RETITLE((COM1|KSLICE14|COM2),YR60"?YEAR",,CAPCOM)
KSLICE18=Y| KSLICE18
KSLICE18=RETITLE(KSLICE18,YR60"?YEAR", ,KSTOCKS)
KSLICE18=RETITLE((COM1;KSLICE18;COM2),YR60"?YEAR",,CAPCOM)
KSLICE32=Y{KSLICE32
KSLICE32=RETITLE(KSLICE32,YR60"?YEAR",,KSTOCKS)
KSLICE32=RETITLE( (COM1\KSLICE32;COM2),YR60"?YEAR", ,CAPCOM)
KSLICE40=Y|KSLICE40
KSLICE40=RETITLE(KSLICE40,YR60"?YEAR", ,KSTOCKS)
KSLICE40=RETITLE((COM1|KSLICE40|COM2),YR60"?YEAR", ,CAPCOM)
KSLICE62=Y!KSLICE62
KSLICE62=RETITLE(KSLICE62,YR60"?YEAR",,KSTOCKS)
KSLICE62=RETITLE((COM1|KSLICE62;COM2),YR60"?YEAR", ,CAPCOM)
PSLICEC[;14;]=PSLICEC[;14;]-CSLICE14
PSLICEC[;18;]=PSLICEC[;18;]+CSLICE18-CSLICE62
PSLICEC[;32;]=PSLICEC[;32;]-CSLICE32
PSLICEC[;37;]=PSLICEC[;37;]-CSLICE18
PSLICEC[;40;]=PSLICEC[;40;]+CSLICE40
PSLICEC[;62;]=PSLICEC[;62;]+CSLICE62
PSLICEC[;104;]=PSLICEC[;104;]+CSLICE14+CSLICE32
PSLICEC[;106;]=PSLICEC[;106;]-CSLICE40
PSLICEK[;14;]=PSLICEK[;14;]-KSLICE14
PSLICEK[;18;]=PSLICEK[;18;]+KSLICE18-KSLICE62
PSLICEK[;32;]=PSLICEK[;32;]-KSLICE32
PSLICEK[;37;]=PSLICEK[;37;]-KSLICE18
PSLICEK[;40;]=PSLICEK[;40;]+KSLICE40
PSLICEK[;62;]=PSLICEK[;62;]+KSLICE62
PSLICEK[;104;]=PSLICEK[;104;]+KSLICE14+KSLICE32
PSLICEK[;106;]=PSLICEK[;106;]-KSLICE40
!
SLIC60"?YEAR"C.RUF=PSLICEC\DES=CAPITAL SLICING ADJUSTMENTS TO GET 1980 SIC
CURR&
    P&
RICE
SLIC60"?YEAR"K.RUF=PSLICEK\&
DES=CAPITAL SLICING ADJUSTMENTS TO GET 1980 SIC, CONST PRICE
!**********FOR PRINTING
```

$!$
COR14 = NEAT (COR14)
C1SLICE14 = NEAT (C1SLICE14)
C2SLICE14=NEAT (C2SLICE14)
C3SLICE14=NEAT (C3SLICE14)
CSLICE14=NEAT (CSLICE14)
KSLICE14=NEAT (KSLICE14)
COR62=NEAT (COR62)
C1SLICE62=NEAT (C1SLICE62)
C2SLICE62 $=$ NEAT (C2SLICE62)
C3SLICE62 $=$ NEAT (C3SLICE62)
CSLICE62 = NEAT (CSLICE62)
KSLICE62=NEAT (KSLICE62)
COR18=NEAT (COR18)
C1SLICE18=NEAT (C1SLICE18)
C2SLICE18=NEAT (C2SLICE18)
C3SLICE18 = NEAT (C3SLICE18)
CSLICE18=NEAT (CSLICE18)
KSLICE18=NEAT (KSLICE18)
COR32 =NEAT (COR32)
C1SLICE32=NEAT (C1SLICE32)
C2SLICE32=NEAT (C2SLICE32)
C3SLICE32 = NEAT (C3SLICE32)
CSLICE32=NEAT (CSLICE32)
KSLICE32=NEAT (KSLICE32)
COR40=NEAT (COR40)
C1SLICE4 $0=$ NEAT (C1SLICE40)
C2SLICE40=NEAT (C2SLICE40)
C3SLICE40=NEAT (C3SLICE40)
CSLICE40=NEAT (CSLICE40)
KSLICE40=NEAT (KSLICE40)
!
! **********PRINTS
!
$/ \mathrm{PR}$ COR14 $\backslash \mathrm{DEC}=3 \backslash 12 \backslash \mathrm{DES}=\mathrm{K} / Q$ FOR PRODIND1: 14
/PR C1SLICE14 \12\DES=THE 1961-81 CAPITAL SLICE FOR PRODINDI:14
/PR C3SLICE14 \12 \DES=EXTRAPOLATED CAPITAL SLICE (1982-86) FOR PRODIND1:14
$/$ PR C2SLICE14 \DEC= $3 \backslash 12 \backslash D E S=G R T H$ RATE APLLIED TO SLICE OF PRODIND1:14
/PR CSLICE14 \12 \DES=THE 1961-87 CAPITAL SLICE FOR PRODIND1: 14
/PR KSLICE14 \12\DES=THE 1961-87 CONSTANT PRICE CAPITAL SLICE FOR PRODIND1:14
!
/PR COR62 \DEC=3\12\DES=K/Q FOR PRODIND1:62
$/$ PR C1SLICE62 \12 \DES=THE 1965-81 CAPITAL SLICE FOR PRODIND1:62
/PR C2SLICE62 \DEC=3\12\DES=GTH RATE APPLIED TO SLICE PRODIN1:14
/PR C3SLICE62 \12\DES=EXTRAPOLATED CAPITAL SLICE (1982-87) FOR PRODIND1:62
/PR CSLICE62 \12 \DES='ГHE 1965-86 CAPITAL SLICE FOR PRODIND1:62
/PR KSLICE62 \12 \DES=THE 1965-87 CONSTANT PRICE CAPITAL SLICE FOR PRODIND1:62
!
/PR COR18 \DEC= $3 \backslash 12 \backslash D E S=K / Q$ FOR PRODIND1: 18
/PR C1SLICE18\12\DES=THE 1961-81 CAPITAL SLICE FOR PRODIND1:18
/PR C2SLICE18 \DEC=3\12\DES=GTH RATE APPLIED TO PRODIND1: 14


```
/PR CSLICE18\12\DES=THE 1961-86 CAPITAL SLICE FOR PRODIND1:18
/PR KSLICE18\12\DES=THE 1961-86 CONSTANT PRICE CAPITAL SLICE FOR PRODIND1:18
!
/PR COR32\DEC=3\12\DES=K/Q FOR PRODIND1:32
/PR C1SLICE32\12\DES=THE 1961-81 CAPITAL SLICE FOR PRODIND1:32
/PR C2SLICE32\DEC=3\12\DES=GRT RATE APPLIED TO PRODIND1:14
/PR C3SLICE32\12\DES=EXTRAPOLATED CAPITAL SLICE (1982-"?YEAR") FOR PRODIND1:32
/PR CSLICE32\12\DES=THE 1961-"?YEAR" CAPITAL SLICE FOR PRODIND1:32
/PR KSLICE32\12\DES=THE 1961-"?YEAR" CONSTANT PRICE CAPITAL SLICE FOR
PRODIND1:&
32
!
/PR COR40\DEC=3\12\DES=K/Q FOR PRODIND1:40
/PR C1SLICE40\12\DES=THE 1961-81 CAPITAL SLICE FOR PRODIND1:40
/PR C2SLICE40\DEC=3\12\DES=GTH RATE APPLIED TO SLICE PROIND1:14
/PR C3SLICE40\12\DES=EXTRAPOLATED CAPITAL SLICE (1982-"?YEAR") FOR PRODIND1:40
/PR CSLICE40\12\DES=THE 1961-"?YEAR" CAPITAL SLICE FOR PRODIND1:40
/PR KSLICE40\12\DES=THE 1961-"?YEAR" CONSTANT PRICE CAPITAL SLICE FOR
PRODIND1:&
4 0
```

D) SECT6087K.TRF

```
/NOQUE
/DEF YEAR\MESS=PLEASE ENTER CURRENT YEAR (EX; 87)
!
*** SECT60"?YEAR"K.TRF
*** CAPITAL INVESTMENT AND STOCK SECTORING PROGRAM
FD6180=SUM (FD6181W70['1961/'1980;i],1)
FD81=SUM (FD8185W80['1981; ; ],1)
FD82"?YEAR"=SUM (FD81"?YEAR"W80['1982/'19"?YEAR"; ;],1)
FD61"?YEAR"=FD6180|FD81|FD82"?YEAR" \({ }^{\text {SSLICE }}\)
FD61"?YEAR"=RETITLE (FD61"?YEAR", YR61"?YEAR", )
/DEL FD6180
FDCON=FD61"?YEAR"[;SECT2.TTL=80/115; ]
FDME=FD61"?YEAR"[;SECT2.TTL=41/76;]
CAP_C=FCFSC"?YEAR"[YR61"?YEAR".TTL='1961/'19"?YEAR"; ;]
FCCON=SUM (CAP C[ ; ; 2/3],1)
FCME=SUM (CAP \(\bar{C}[; ; 4 / 5], 1)\)
FCCAPCON[;SECTT2.TTL:1;]=SUM (FCCON[;1,2;],2)
FCCAPCON[;2;]=FCCON[;2;]
FCCAPCON[;3;]=SUM (FCCON[;4/8;],2)
FCCAPCON[;4;]=SUM (FCCON[;9/17;],2)
FCCAPCON [;5;]=SUM (FCCON[;18,19;],2)
FCCAPCON [; 6; ]=SUM (FCCON[;20,22; ],2)
\(\operatorname{FCCAPCON}[; 7 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 21,23,24,33 ;], 2)\)
\(\operatorname{FCCAPCON}[; 8 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 25 / 32,80 ;], 2)\)
\(\operatorname{FCCAPCON}[; 9 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 34,41 ;], 2)\)
\(\operatorname{FCCAPCON}[; 10 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 42 / 47 ;], 2)\)
FCCAPCON \([; 11 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 48 / 50,92 ;], 2)\)
\(\operatorname{FCCAPCON}[; 12 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 51 / 54 ;], 2)\)
FCCAPCON \([\);13; \(]=\operatorname{SUM}(\operatorname{FCCON}[; 55 / 57 ;], 2)\)
FCCAPCON[ \(14 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 58 / 64 ;], 2)\)
FCCAPCON[;15;]=SUM (FCCON[;65/73; ],2)
FCCAPCON \([; 16 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 74 / 76,90 ;], 2)\)
FCCAPCON[;17;]=SUM (FCCON[ \(; 77 / 79,81 / 85 ;], 2)\)
FCCAPCON \([; 18 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 86 / 89,91,93 / 95 ;], 2)\)
FCCAPCON[;19;]=SUM (FCCON[;96/104;],2)
FCCAPCON \([; 20 ;]=\operatorname{SUM}(\operatorname{FCCON}[; 105,106 ;], 2)\)
FCCAPCON[;21;]=SUM (FCCON[;107/114;],2)
FCCAPCON[;22;]=SUM (FCCON[;115/119;],2)
FCCAPCON [;23; ]=FCCON[;120; ]
FCCAPCON \([; 24 ;]=\operatorname{FCCON}[; 133 ;]\)
FCCAPCON[;25;]=FCCON[;134;]
FCCAPCON \([; 26 ;]=\operatorname{FCCON}[; 122 ;]\)
FCCAPCON[;27;]=FCCON[;126; ]
FCCAPCON[;28;]=FCCON[;124;]
FCCAPCON[;29;]=FCCON[;125; ]
FCCAPCON [; 30; ] \(=\operatorname{SUM}(\operatorname{FCCON}[129,130 ; j, 2)\)
FCCAPCON[;31;]=FCCON[;123;]
```

```
FCCAPCON[;32;]=FCCON[;131;]
FCCAPCON[;33;]=SUM (FCCON[;121,127,128;],2)
FCCAPCON[;34;]=FCCON[;135;]
FCCAPCON[;35;]=FCCON[;136;]
FCCAPCON[;36;]=SUM (FCCON[;137/141;],2)
!
FCCAPME[;SECT2.TTL:1;]=SUM(FCME[;1,2;],2)
FCCAPME [;2;]=FCME [;2;]
FCCAPME [;3;]=SUM (FCME [;4/8;],2)
FCCAPME [;4;]=SUM(FCME [;9/17;],2)
FCCAPME [;5;]=SUM (FCME [;18,19;],2)
FCCAPME [;6;]=SUM (FCME [;20,22;],2)
FCCAPME [;7;]=SUM (FCME [;21,23,24,33;],2)
FCCAPME [;8;]=SUM(FCME [;25/32,80;],2)
FCCAPME[;9;]=SUM(\operatorname{FCME}[;34,41;],2)
FCCAPME[;10;]=SUM(FCME[;42/47;],2)
FCCAPME [;11;]=SUM(FCME [;48/50,92;],2)
FCCAPME [;12;]=SUM(FCME[;51/54;],2)
FCCAPME [;13;]=SUM (FCME [;55/57;],2)
FCCAPME [;14;]=SUM (FCME [;58/64;],2)
FCCAPME [;15;]=SUM(FCME [;65/73;],2)
FCCAPME [;16;]=SUM (FCME [;74/76,90;],2)
FCCAPME [;17;]=SUM (FCME[;77/79,81/85;],2)
FCCAPME [;18;]=SUM (FCME [;86/89,91,93/95;],2)
FCCAPME [;19;]=SUM (FCME [;96/104;],2)
FCCAPME[;20;]=SUM (FCME[;105,106;],2)
FCCAPME[;21;]=SUM (FCME[;107/114;],2)
FCCAPME[;22;]=SUM(FCME[;115/119;],2)
FCCAPME [;23;]=FCME[;120;]
FCCAPME[;24;]=FCME[;133;]
FCCAPME [;25;]=FCME[;134;]
FCCAPME[;26;]=FCME[;122;]
FCCAPME[;27;]=FCME[;126;]
FCCAPME[;28;]=FCME[;124;]
FCCAPME [;29;]=FCME[;125;]
FCCAPME [;30;]=SUM (FCME[;129,130;],2)
FCCAPME [;31;]=FCME[;123;]
FCCAPME [;32;]=FCME[;131;]
FCCAPME [;33;]=SUM (FCME [;121, 127,128;],2)
FCCAPME[;34;]=FCME[;135;]
FCCAPME [;35;]=FCME[;136;]
FCCAPME[;36;]=SUM(FCME[;137/141;],2)
DIFCON=FCCAPCON-FDCON
DIFME=FCCAPME-FDME
!
P1=FCCAPCON;FDCON;DIFCON;FCCAPME;FDME!DIFME
!
/TITLE P1\STCS_CON,FD_CON,DIFF,STCS_ME,FD_ME,DIFF
P1=RETITLE (P1,,,P1.TT\overline{T})
!
/DEL FCCAPCON
/DEL FCCAPME
```


## !

PREL4 = TRANSP (P1, 2, 3, 1)
prel4 $[26 ; i]=\operatorname{sum}($ prel $4[26,31 ; i], 3)$
prel4 $[31 ; i]=0$
PREL4 $[1,2,4 / 20,23 / 25,27 / 36 ; i]=0$
$/ P R$ PREL $4 \backslash D E C=1 \backslash D E S=S E L E C T E D$ INDUSTRIES' INVESTMENT: STCS AND FD DIFFERENCES !
DIFRAW=PREL4 $[; 3,6]$
DIFRAW=DIFRAW*BOOLGE (DIFRAW,0)
NOTE: THIS PORTIN OF THE PROGRAM HAS BEEN REPLACED BY THE ABOVE STATEMENT, THIS PART OF THE PROGRAM WAS DONE TO MANUALLY ADJUST THE NEAGTIVE VALUES RESULTANT OF THE DIFFERENCES BETWEEN CAPITAL STOCK DATA \& I/O DAT (FINAL DEMAND). DONE BY R. FORTIN 28/11/90
! DIFRAW $[26 ; 11 ; 2]=\operatorname{DIFRAW}[26 ; 11 ; 2]+9000$
!DIFRAW $[26 ; 12 ; 2]=\operatorname{DIFRAW}[26 ; 12 ; 2]+10000$
! DIFRAW $[26 ; 13 ; 2]=\operatorname{DIFRAW}[26 ; 13 ; 2]+30000$
! DIFRAW $[26 ; 14 ; 2]=\operatorname{DIFRAW}[26 ; 14 ; 2]+45000$
! DIFRAW $[26 ; 15 ; 2]=\operatorname{DIFRAW}[26 ; 15 ; 2]+62000$
! DIFRAW $[26 ; 16 ; 2]=\operatorname{DIFRAW}[26 ; 16 ; 2]+50000$
! DIFRAW $[26 ; 17 ; 2]=\operatorname{DIFRAW}[26 ; 17 ; 2]+19000$
! DIFRAW $[26 ; 18 ; 2]=\operatorname{DIFRAW}[26 ; 18 ; 2]+20000$
! DIFRAW $[26 ; 19 ; 2]=\operatorname{DIFRAW}[26 ; 19 ; 2]+20000$
! DIFRAW $[26 ; 20 ; 2]=\operatorname{DIFRAW}[26 ; 20 ; 2]+16000$
! DIFRAW $[26 ; 21 ; 2]=$ DIFRAW $[26 ; 21 ; 2]+61800$
! DIFRAW $[26 ; 22 ; 2]=\operatorname{DIFRAW}[26 ; 22 ; 2]+71200$
! DIFRAW $[26 ; 23 ; 2]=\operatorname{DIFRAW}[26 ; 23 ; 2]+68780$
! DIFRAW $[26 ; 24 ; 2]=\operatorname{DIFRAW}[26 ; 24 ; 2]+1385$
!DIFRAW[ $26 ; 25 ; 2]=$ DIFRAW $[26 ; 25 ; 2]+0$
NBIC $=$ TRANSP (DIFRAW $[3,21,22,26 ; i], 2,3,1$ )
NBIC=RETITLE (NBIC,YR61"?YEAR",NBIC, DIFRAW.TT1)
!
$!\operatorname{NBIC}[1 / 6 ; 1 ; 1]=0$
! NBIC $[1 / 11 ; 1 ; 2]=0$
$!$ NBIC $[1 / 6 ; 2 ;]=0$
$!\operatorname{NBIC}[1 / 11 ; 3 ;]=0$
! NBIC $[1 / 6 ; 4 ;]=0$
$C 1=\operatorname{SUM}\left(C A P \_C[; 4 / 8 ;], 2\right)!\operatorname{SUM}\left(C A P \_C[; 107 / 114 ;], 2\right) \mid \operatorname{SUM}\left(C A P \_C[115 / 119 ;], 2\right) \&$
|CAP_C[;12 $\overline{2} ;]$
$C 1=C \overline{1}[; 1 / 5]$
CAP K=FCFSK"?YEAR" [YR61"?YEAR". TTL='1961/'19"?YEAR"; ; ]
$\mathrm{K} 1=\bar{S} U M\left(C A P \_K[; 4 / 8 ;], 2\right)$ 'SUM (CAP_K[;107/114;],2) $\operatorname{SUM}\left(C A P \_K[; 115 / 119 ;], 2\right) \&$
|CAP_K[;12 $\overline{2} ;]$
$\mathrm{K} 1=\mathrm{K} \overline{1}[; ; 1 / 5]$
C1 $[; ; 2]=C 1[; ; 2]+C 1[; 3]$
$C 1[; 4]=C 1[; ; 4]+C 1[; ; 5]$
C1 $[; ; 3,5]=0$
$\mathrm{K} 1[; ; 2]=\mathrm{K} 1[; ; 2]+\mathrm{K} 1[; ; 3]$
$\mathrm{K} 1[; ; 4]=\mathrm{K} 1[; ; 4]+\mathrm{K} 1[; ; 5]$
$\mathrm{K} 1[; ; 3,5]=0$
C1=RETITLE (C1,YR61"?YEAR",NBIC.TTL,K1.TT1)

```
K1=RETITLE(K1,YR61"?YEAR",NBIC.TTL,K1.TT1)
!
NBIP=RETITLE((C1/K1)[;;2,4],YR61"?YEAR",NBIC.TTL,DIFRAW.TT1)
/DEL K1
/DEL C1
NBIK=NBIC/NBIP
NBIK=NBIK[1; ]|NBIK\SLIC
NBIK[1; ] =0
NBIK=RETITLE (NBIK,YR60"?YEAR",NBIC.TTL,DIFRAW.TT1)
NBINVK=TRANSP(NBIK,2,3,1)
/PR NBINVK\DES=CONSTANT PRICE ESTIMATES OF NON-BUS. NET INVESTMENT
!
CK=agg(FCFSK"?YEAR"[YR60"?YEAR".TTL='1960/'19"?YEAR"; ; ], 2, capind1)
CCARK=(CK[;;11]/CK[;;26]*-1)+1
!
SSK[YR60"?YEAR";PRODIND1;CAPCOM]=0\FLOAT
! 1. NON-METAL MINES
SSK[;5;1]=SUM (NBIK[;1;],1)
SSK[;5;2]=NBIK[;1;1]
SSK[;5;4]=NBIK[;1;2]
! 2. CHEMICAL AND CHEMICAL PRODUCTS IND (PART AECL)
SSK[;80;1]=SUM (NBIK[;2;],1)
SSK[;80;2]=NBIK[;2;1]
SSK[;80;4]=NBIK [;2;2]
! 3. MISCELLANEOUS MANUFACTURING IND (PART AECL)
SSK[;90;1]=SUM(NBIK[;3;],1)
SSK[;90;2]=NBIK[;3;1]
SSK[;90;4]=NBIK[;3;2]
! 4. RAILWAY TRANSPORT IND (CBDC RAIL)
SSK[;93;1]=SUM(NBIK[;4;],1)
SSK[;93;2]=NBIK[;4;1]
SSK[;93;4]=NBIK[;4;2]
! *** GROSS
/DEF YEAR2 \MESS=ENTER VALUE=TO CURRENT YEAR (EX;1987=27)
!DISCARDS FOR NON BUSINESS IS EQUAL TO (DISC TOTAL/INVEST TOTAL)
!* INVESTMENT NON BUSINESS
DNB= (CK[;;36]/CK[;;1])*SSK[;;1]
DNB=CUMSUM (DNB[2/"?YEAR2";;],3)
DNB=RETITLE (DNB,YR6287.TTL,PRODIND1.TTL, )
SSK2=CUMSUM (SSK[2/"?YEAR2";;1],3)
SSK2=RETITLE (SSK2,YR6287.TTL, ,)
SSK[2/"?YEAR2";;26]=SSK2-DNB
! *** NET
! SSK1=CUMSUM ( (SSK[; ;1]*CCARK),3)
SSK1=CUMSUM (SSK [;1]-((1-CCARK)*SSK[;;26]),3)
SSK[;;31]=SSK1
SSK[;;16]=(SSK[;;26]-(\operatorname{DELTA}(\operatorname{SSK}[;;26],3)-\operatorname{SSK}[;;26]))/2
SSK[;;21]=(SSK[;;31]-(DELTA (SSK[;;31],3)-SSK[;;31]))/2
SST60"?YEAR".RUF=SSK\DES=SECTORING ADJUSTMENT FOR K$ CAPITAL STOCK DATA 1960/&
87IF (
/PROMPT PRINT\MESS=DO WANT TO PRINT PREL4?
$IF (PRINT=1)
```

/PRINT PREL4 \DES=DIFFERENCES BETWEEN CAP STOCK DIV \& FINAL DEMAND(I/O) \QUE \$ENDIF
SSK=NEAT (SSK)
/PROMPT PRINT \MESS=DO WANT TO PRINT SSK? (ENTER Y OR N)
\$IF (PRINT=1)
/PROMPT PRINT\MESS=DO WANT TO PRINT SSK2? (ENTER Y OR N)
PR SSK\DES=LAST STEP FOR THE 4 SELECTD INDUSTRIES\QUE
\$ENDIF
\$IF (PRINT=1)
/PR SSK2 \DES=GROSS CAP STOCK\QUE
\$ENDIF
/PROMPT PRINT\MESS=DO WANT TO PRINT DNB? (ENTER Y OR N)
\$IF (PRINT=1)
$/$ PR DNB \DES=DISCARDS OF NON BUSINESS $\backslash Q U E$
\$ENDIF
/PROMPT PRINT \MESS=DO WANT TO PRINT NBIK? (ENTER Y OR N) \$IF (PRINT=1)
$/$ PR NBIK\DES = NON BUSINESS INVESTMENT IN CONSTANT DOLLARS \QUE \$ENDIF
/PROMPT PRINT $M E S S=D O$ WANT TO PRINT NBIC? (ENTER Y OR N)
\$IF (PRINT=1)
/PR NBIC\NON BUSINESS IN CURRANT DOLLARS \QUE
\$ENDIF
/PROMPT PRINT\MESS=DO WANT TO PRINT NBIC? (ENTER Y OR $N$ )
\$IF (PRINT=1)
$/ P R$ NBIP $/$ NON BUSINESS INVESTMENT PRICE\QUE
\$ENDIF

## E) CAP6087C.TRF

```
/DEF YEAR\MESS=PLEASE ENTER YEAR WANTED (EX; 87)
/DEF YEAR2\MESS=PLEASE ENTER VALUE EQUAL TO YEAR (EX:118 EQUALS 1987)
/DEL *
!
*** CAP60"?YEAR"C.TRF ***
*** Producing Timeseries of CURRENT Price Capital ***
*** Stock estimates at the PRODIND1 level of 109 *
*** industry groups for 1960-19"?YEAR" ***
!
CK=AGG(FCFSK"?YEAR"[YR60"?YEAR".TTL='1960/'19"?YEAR"; ; ],2,CAPIND1)
CC=AGG(FCFSC"?YEAR"[YR60"?YEAR".TTL='1960/'19"?YEAR";;],2,CAPIND1)
CAPSIC80C=CC+SLIC60"?YEAR"C
CP=CC/CK
SST60"?YEAR"C1=CP*SST60"?YEAR"K1
CAPPRODC=CAPSIC80C-SST60"?YEAR"C1
!
```

/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX ( $Y$ OR N) \$IF (PRINT=1)
/PRINT CC\DES=FCFSC"?YEAR"-CP160"?YEAR"C\QUE \$ENDIF
F) CAP6087K.TRF

```
/DEL *
/DEF YEAR\MESS=ENTER YEAR WANTED (EX; 87)
/DEF YEAR2\MESS= ENTER VALUE EQUAL TO YEAR WANTED (EX: 118 EQUALS 1987)
!
*** CAP60"?YEAR"K.TRF
```

Producing Timeseries of Constant Price capital Investment and
*** Stock for preliminary MFP estimates at the PRODIND1 level of 109 ***
*** industry groups for 1960-19"?YEAR" ***
CK=AGG (FCFSK"?YEAR"[YR60"?YEAR".TTL='1960/'19"?YEAR"; ; ], 2, CAPIND1) CAPSIC80K=CK+SLIC60"?YEAR"K

## CAPPRODK=CAPSIC80K-SST60"?YEAR"K1

*** ADJUSTING THE CAPIAL MATRIX, AFTER SECTORING AND SLICING, FOR
*** PRODUCTIVITY MEASUREMENT : ALL END-YEAR COMPONENTS WILL BE LAGGED

```
! *** ONE YEAR ***
*** NOTE LAG NOT DONE FOR 1960-87 DONE IN FURTHER PROCESSING*ぇ
```

! LAGK=CAPPRODK [; ; 26/35]
! LAGK60=AGG (NEWSK['1959; ;LAGK.TT1=26/35],2,CAPIND1)
! LAGK=LAGK60:LAGK\SLIC
! LAGK=RETITLE (LAGK[1/27; ] ,YR6087, ,)
! CAPPRODK [; ; 26/35]=LAGK
$!$
! -- INVENTORY THE FOUR TYPES OF CAPITAL STOCK DATA ---
CP160"?YEAR"K [; ;CAPCOM2 ] = \&
CAPPRODK $[; ; 16]$ CAPPRODK $[; 21] \mid C A P P R O D K[; 26]: C A P P R O D K[; 31] \backslash C O L$
CP160"?YEAR"K.RUF=CP160"?YEAR"K 1 REP $\backslash D E S=\&$
CONSTANT PRICE CAPITAL STOCK DATA FOR 1960 TO 19 "?YEAR" ADJUSTED FOR MFP MEASUR\&
EMENT
! THIS PORTIN VERIFIES DATA BY SUBTRACTING THE ORIGINAL FILE
! FCFSK"?YEAR" AND THE FINAL FILE CP160"?YEAR"K, ONLY THE
! INDUSTRIES AFFECTED BY SECTORING AND SLICING
$A A=F C F S K " ? Y E A R^{\prime \prime}[111 / 118 ; ; 16,21,26,31]$
$A A=A G G(A A, C A P I N D 1, C A P I N D 1)$
$A A=R E T I T L E(A A, ~, C A P C O M 2)$
$B=C P 160^{\prime \prime} ? Y E A R " K[21 / 28 ;$; $]$
$B B=R E T I T L E(B, A A . T T 3,$,
$C C=A A-B B$
/PROMPT PRINT\MESS=DO YOU WANT TO PRINT VERIFICATION MATRIX (Y OR N)
\$IF (PRINT=1)
/PRINT CC\DES=FCFSK"?YEAR"-CP160"?YEAR"K\QUE
\$ENDIF

Machinery \& Equipment and the differences between both the ICSD construction \& FD construction files and for ICSD machinery \& equipment (plus CICOE) and Final Demand machinery \& equipment.

The next step sets to zero the differences which have a negative value. The negative values are due to differences in the allocation of leased capital by the Input/Output division and the Investment and capital Stock Division. This operation is performed in the program as follows:
DIFRAW=DIFRAW*BOOLGE (DIFRAW,0)

This process was previously done by manually allocating values to industry 26 (Railway \& Telephone Industry) and setting to zero some specific years for the other three industries (Mining, Chemicals and Miscellaneous Manufacturing).

For the Chemical \& Chemical Products Industry both the differences for construction and Machinery \& Equipment were set to zero for 1961-1966. Miscellaneous Manufacturing Industry differences were zeroed out for 1961-1971. The Railway Transportration Industry had its differences zeroed out for 1961-1966. The differences were then stored in a current file known as NBIC.

The following part of the program goes back to the CAP_C file which is the ICSD (FCFSC87. RUF) file and extracts the construction (Building \& Engineering) and the Machinery \& Equipment added with the CICOE. This is also

## APPENDIX C

ANALYSIS OF SECT6087R.TRF

ANALYSIS OF SECT6087K.TRF
(program used with geometric depreciation)
FILE:CAP2.WP
OVERVIEW

The main purpose of the sECT6087R.TRF program is to allocate sectoring adjustments for the constant price capital stock data for selected industries. This is done by extracting from the FINAL DEMAND matrices the construction component as well as the machinery \& equipment component and summing the commodities ( 1 to 602) for all industries. Afterwards the Building Engineering Construction and the Machinery \& Equipment plus the CICOE ${ }^{10}$ are extracted from the Investment and Capital Stock Division-ICSD file (FCFSC87.RUF) current dollars.

The data is then formatted into a 36 industry file:

## [SALEM]SECT2.TTL

1 AGRICULTURE AND FISHING
2 FORESTRY
3 MINING QUARRYING \& OIL WELLS
4 FOOD AND BEVERAGES
5 TOBACCO AND TOBACCO PRODUCTS
6 RUBBER PRODUCTS
7 LEATHER GOODS
8 TEXTILE PRODUCTS
9 CLOTHING AND KNITTING MILLS
10 WOOD PRODUCTS
11 FURNITURE AND FIXTURES
12 PAPER AND ALLIED INDUSTRIES
13 PRINTING,PUBLISHING \& ALLIED
14 PRIMARY METALS
15 METAL FABRICATING
16 MACHINERY
17 TRANSPORT EQUIPMENT
18 ELECTRICAL PRODUCTS
19 NON-METALLIC MINERAL PRODUCT
20 PETROLEUM AND COAL PRODUCTS
21 CHEMICALS \& CHEMICAL PROD.
22 MISCELLANEOUS MANUFACTURING
23 CONSTRUCTION INDUSTRY

[^6]24 ELECTRIC POWER
25 GAS DISTRIBUTION
26 RAILWAY TRANSPORT
27 URBAN TRANSIT SYSTEMS
28 WATER TRANSPORT AND SERVICES
29 MOTOR TRANSPORT
30 GRAIN ELEVATORS
31 TELEPHONES
32 BROADCASTING
33 AIR TRANSPORT \& OTH. UTIL.
34 TRADE, WHOLESALE AND RETAIL
35 FINANCE INSURANCE \& REAL EST
36 COMMERCIAL SERVICES

After which the difference is computed between the Investment \& capital Stock Division file (FCFSC87.RUF) and the FINAL DEMAND file, or as stated in the program.

```
DIFCON = FCCAPCON - FDCON
DIFME = FCCAPME - FDME
```

The next process combines the Railway Transportation Industry (26) and the Telephone Service Industry (31) and sets the values to zero for all the industries, excluding:

3 MINING, QUARRYING \& OIL WELLS
21 CHEMICALS \& CHEMICAL PRODUCTS
22 MISCELLANEOUS MANUFACTURING
26 RAILWAY TRANSPORTATION

This provides us with a file containing the values for each file (Investment Capital stock Division \& Final Demand) for both construction and

Machinery \& Equipment and the differences between both the ICSD construction \& FD construction files and for ICSD machinery \& equipment (plus CICOE) and Final Demand machinery \& equipment.

The next step sets to zero the differences which have a negative value. The negative values are due to differences in the allocation of leased capital by the Input/Output division and the Investment and Capital Stock Division. This operation is performed in the program as follows:

## DIFRAW=DIFRAW*BOOLGE (DIFRAW,0)

This process was previously done by manually allocating values to industry 26 (Railway \& Telephone Industry) and setting to zero some specific years for the other three industries (Mining, Chemicals and Miscellaneous Manufacturing).

For the Chemical \& Chemical Products Industry both the differences for Construction and Machinery \& Equipment were set to zero for 1961-1966. Miscellaneous Manufacturing Industry differences were zeroed out for 1961-1971. The Railway Transportration Industry had its differences zeroed out for $1961-$ 1966. The differences were then stored in a current file known as NBIC.

The following part of the program goes back to the CAP_C file which is the ICSD (FCFSC87.ROF) file and extracts the Construction (Building \& Engineering) and the Machinery \& Equipment added with the CICOE. This is also done for the constant price file (FCFSK87.RUF). Then the current file is divided by the constant to give the Non Business Investment Price file (NBIP).

The next step creates what is known as Constant Price Estimates of Non Business Net Investment. This is done by way of the following equation.


The NBIK file has the following dimensions:

| YR6087.TTL | 28 |
| :--- | ---: |
| NBIC.TTL | 4 |
| DIFRAW.TTL | 2 |

Where YR6087.TTL are the years from 1960 to 1987 and DIFRAW.TTL is the differences for construction and Machinery \& Equipment. NBIC.TTL is the four selected industries:

The following step takes the CCA (extracted from FCFSK87. RUF aggregated to the 108 level) and divides it by the Gross-End Year Stock Total also extracted from FCFSK87. RUF. This gives a matrices callled CCARK with values of less than 1 and that will be applied further on in the SECT6087K.TRF program.

The last step takes the data from the above NBIK ( Non Business Constant Price Estimates file) and inserts it in a file known as SSk which includes the total of Construction and Machinery \& Equipment, and both components shown separately for the four industries adjusted (Mines, Chemicals, Miscellaneous Manufacturing, Railway).

To obtain the Gross End-Year Stock Total the program performs the following operation. First it finds the discards for the non business by assuming that the rates of discards to investment is the same as for business, which is equal to:
(DISCARDS TOTAL/INVESTMENT TOTAL)*INVESTMENT NON BUSINESS

$$
\text { DNB=(CK }[; ; 36] / C K[; 1]) * \operatorname{SSK}[; 1]
$$

The following operation does the cumulative sum (for all years) of the results of the preceding operation.

```
DNB=CUMSUM(DNB[2/"?YAR2";;1],3)
```

The next step takes the cumulative sum of the Gross Fixed capital Formation Total and subtracts DNB or the cumulative sum of the Discards of Non Business.

```
SSK2=CUMSUM(DNB[2/"?YEAR2";;],3)
SSK[2/"?YEAR2";;26]=SSK2-DNB
```

The result of this operation is then inserted in the SSR file as Gross End-Year stock Total.

Obtaining the NET is done by multiplying the Gross End-Year Stock Total by CCARR , mentionned above, the result is then inserted in the SSR component of Net End-Year Stock Total.

The Gross \& Net Mid-Year is created by finding the change (Delta) from year to year of the Gross End-Year and the Net End-Year divided by two, or as stated in the program:

GROSS MID-YEAR STOCK TOTAL

SSK $[; ; 16]=(S S K[; ; 26]-(\operatorname{DELTA}(S S K[; ; 26], 3)-\operatorname{SSK}[; ; 26])) / 2$

NET MID-YEAR STOCK TOTAL

```
SSK[;;21]=(SSK[;;31]-(DELTA(SSK[;;31],3)-SSK[;;31]))/2
```

The final step of the program is to put the data into a RUF file SST6087R.RUF, with the content described as SECTORING ADJUSTMENT FOR K\$ CAPITAL STOCK DATA 1960/87.

SST6087R.RUF has the following dimensions:

$$
\begin{array}{rr}
\text { YR6087.TTL } & 28 \\
\text { PRODIND1.TTL } & 109 \\
\text { CAPCOM.TTL } & 40
\end{array}
$$

The only cells containing data are the one relevant to the four industries and the relevant items affected by sectoring:

PRODIND1.TTL 3 MINING, QUARRYING \& OIL WELLS
21 CHEMICALS \& CHEMICAL PRODUCTS
22 MISCELLANEOUS MANUFACTURING
26 RAILWAY TRANSPORTATION

CAPCOM.TTL

> 1 GROSS FCF TOTAL 2 GROSS FCF BUILDING CONSTRUCTION 4 GROSS FCF MACHINERY \& EQUIPMENT 16 GROSS MID-YEAR STOCK TOTAL 21 NET MID-YEAR STOCK TOTAL

## INDUSTRIES EXTRACTED FROM THE FINAL DEMAND MATRICES

## MACHINERY \& EQUIPMENT

M\&E AGRICULTURE AND FISHING
M\&E FORESTRY

M\&E MINING QUARRYING \& OIL WELLS
M\&E FOOD AND BEVERAGES
M\&E TOBACCO AND TOBACCO PRODUCTS
M\&E RUBBER PRODUCTS
M\&E LEATHER GOODS
M\&E TEXTILE PRODUCTS
M\&E CLOTHING AND KNITTING MILLS
M\&E WOOD PRODUCTS
M\&E FURNITURE AND FIXTURES
M\&E PAPER AND ALLIED INDUSTRIES
M\&E PRINTING,PUBLISHING \& ALLIED
M\&E PRIMARY METALS
M\&E METAL FABRICATING
M\&E MACHINERY
M\&E TRANSPORT EQUIPMENT
M\&E ELECTRICAL PRODUCTS
M\&E NON-METALLIC MINERAL PRODUCT
M\&E PETROLEUM AND COAL PRODUCTS
M\&E CHEMICALS \& CHEMICAL PROD.
M\&E MISCELLANEOUS MANUFACTURING
M\&E CONSTRUCTION INDUSTRY
M\&E ELECTRIC POWER
M\&E GAS DISTRIBUTION
M\&E RAILWAY TRANSPORT
M\&E URBAN TRANSIT SYSTEMS
M\&E WATER TRANSPORT AND SERVICES
M\&E MOTOR TRANSPORT
M\&E GRAIN ELEVATORS
M\&E TELEPHONES
M\&E BROADCASTING
M\&E AIR TRANSPORT \& OTH. UTIL.
M\&E TRADE, WHOLESALE AND RETAIL
M\&E FINANCE INSURANCE \& REAL EST
M\&E COMMERCIAL SERVICES
M\&E CHURCHES AND UNIVERSITIES
M\&E USED CARS, EQUIP'T. \& SCRAP
M\&E GOVERNMENT SECTOR

## ** INDUSTRIES EXTRACTED FROM THE FINAL DEMAND MATRICES

## CONSTRUCTION

CON AGRICULTURE AND FISHING
CON FORESTRY
CON MINING QUARRYING \& OIL WELLS
CON FOOD AND BEVERAGES
CON TOBACCO AND TOBACCO PRODUCTS
CON RUBBER PRODUCTS
CON LEATHER GOODS

CON TEXTILE PRODUCTS
CON CLOTHING AND KNITTING MILLS
CON WOOD PRODUCTS
CON FURNITURE AND FIXTURES
CON PAPER AND ALLIED INDUSTRIES
CON PRINTING, PUBLISHING \& ALLIED
CON PRIMARY METALS
CON METAL FABRICATING
CON MACHINERY
CON TRANSPORT EQUIPMENT
CON ELECTRICAL PRODUCTS
CON NON-METALLIC MINERAL PRODUCT
CON PETROLEUM AND COAL PRODUCTS
CON CHEMICALS \& CHEMICAL PROD.
CON MISCELLANEOUS MANUFACTURING
CON CONSTRUCTION INDUSTRY
CON ELECTRIC POWER
CON GAS DISTRIBUTION
CON RAILWAY TRANSPORT
CON URBAN TRANSIT SYSTEMS
CON WATER TRANSPORT AND SERVICES
CON MOTOR TRANSPORT
CON GRAIN ELEVATORS
CON TELEPHONES
CON BROADCASTING
CON AIR TRANSPORT \& OTH. UTIL.
CON TRADE, WHOLESALE AND RETAIL
CON FINANCE INSURANCE + REAL EST
CON COMMERCIAL SERVICES
CON CHURCHES AND UNIVERSITIES
CON HOUSING
CON REAL ESTATE COMMISSIONS
CON GOVERNMENT SECTOR


[^0]:    ${ }^{7}$ The analytical models and computation methodologies used in the estimation of capital stock and related series are discussed in "Fixed Capital flows and Stocks: Methodology", National Wealth and Capital Stock Section, Investment and Capital stock Division, Statistics Canada, May 1990. For a comparison with methods underlying the old capital stock and depreciation series, the reader should refer to Statistics Canada Catalogues 13-211 and 13-568.

[^1]:    ${ }^{2}$ See, for instance, Christensen, L. "Entrepreneurial Income: How Does it Measure Up?" American Economic Review, 61, 1971. His research is consistent with our finding that imoutations of labour income based on estimates of hours worked by owners and partners and the average industry wage rate are often equal to or larger than the net income of unincorporated business our computations show an unusually small, and often negative, rate of return on invested capital because some important elements of capital compensation, such as capital gains on good will and real property, which accrue to the firm, are not included in their current income.

[^2]:    ${ }^{4}$ Implications of different depreciation patterns are discussed in Coen, R.M., "Alternative Measures of Capital and its Rate of Return in Manufacturing" in Dan usher (ed.) The Measurement of Capital, The University of Chicago Press, Chicago, 1980.

[^3]:    ${ }^{6}$ Judging by the compensation of employees paid by business sector establishments, some 80\% of activities of this industry have, on average, been carried out by own-business establishments.

[^4]:    ${ }^{7}$ In some cases the difference in negative due to data revision by the Investment and Capital Stock Division not immediatelly incorpated into the final demand matrix. Negative differences in the case of Railway Transportation industry, are due to the inclusion of an imputation for post office investment. This practice has been recently discontinued. All negative differences are eliminated prior to the calculational non-business capital stock. We know, in fact, that non-busjness sector establishments in the four industry categories have only been in operation between 1961 and 1986 and that, priar to 1961 no substantious differences in coverage existed between the SIC system and the business eriterion.

[^5]:    8if the files refer to Delayed or Linear Depreciation, the *.Ruf and *. TRF files names end with $D$ or $L$ (e.g. FCFSK870.RUf).

[^6]:    $g_{\text {List }}$ of industries extracted from the final Demand matrices is included at the end of the text.
    ${ }^{10}$ Capital itens charged to operating expenses.

