MARYLAND INTERINDUSTRY FORECASTING PROJECT

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1967 Capital Flow Matrix

by

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The capital flow table links the output of capital goods industries to the investment spending of all industries in the economy. The completed table has 60 rows and 94 columns. Each row represents a capital producing industry, and each column, a capital purchasing industry. There are only 60 rows because only 60 of the 185 industries in the model produce capital equipment. There are only 94 columns because investment time series are not available to match the full detail of the 185 industries. They are aggregated into 94 groups for the purposes of capital investment functions.

A cell within the matrix, say in the fifth row and ninth column, contains the dollar value of equipment produced by industry number 5 and sold to investment group number 9. The sum of all the cells in row number 5 would yield the total value of capital equipment produced by industry number 5, and the sum of all cells in column number 9 would equal the value of investment, in equipment, of investment group number 9.

Summary of the Construction of the 1967 Capital Flow Matrix

There were four primary pieces of information used in the construction of the 1967 table. This raw material was: 1) Capital Flow Matrix, 1958, a publication of the U.S. Department of Labor, 2) production of capital equipment, which came from the balancing of the input-output matrix, 3) the purchases of capital equipment, by investment group, which had to be estimated using data from the Census of Manufactures, Census of Mineral Industries,

Survey of Current Business, (January, 1970), and 4) known flows,
which are dollar values of capital equipment known to be sold by
a particular industry to a particular investment group. The known
flows eminated from studies done on the Transportation Industry
and some of the more detailed product information in the Census
of Manufactures. The problems of working with the 1958 matrix
were two-fold. The 1958 matrix has only 35 rows and 77 columns.
More detail was desired so the industries in the capital flow matrix
would "match up" with the industries used in the input-output
matrix, therefore the first problem was to disaggregate the rows
and columns of the 1958 matrix. In addition, two "ghost" industries
which purchase capital equipment had to be added. These industries
are the Computer Rental Industry and the Personal Auto Industry.
The second problem was to revise the 1958 values in the table to
make them apply to 1967.

The Computer Rental Industry arises from the fact that most
computers are not sold, but are rented. They therefore do not
show up in the investment reported by manufacturing plants. Since
these investment data are fundamental for us, we prefer not to
tamper with them by making adjustments for computer ownership.
Instead, we created a special industry that does nothing but buy
and rent computers. It has not a single employee or other input,
for these are all in manufacturing or business service industries.

Another anomalous capital purchaser is Personal Automobiles.
Many automobiles that are purchased by individuals are used for
business purposes. In the National Accounts, some estimate

is made of these automobiles classified as Producer Durable Equipment.
In our model, a special Personal Automobile Industry buys these
cars to keep our definition similar to that in the Accounts.

The first step in expanding the 1958 matrix was to increase
the number of columns from 77 to 94. This spreading was accomplished
by using the 1967 purchases of capital equipment as column controls.
The 77 columns were divided in proportion to the 94 column controls.
Suppose, for example, that the 50th column of the 1958 matrix
was to be divided among the 61st, 62nd, and 63rd columns of the
1967 matrix. The old 50th column would first be put into each
of the three new ones, 61, 62, and 63. Then the values in each
new column were forced to add to the column's control by multiplying
each cell in a column by the same constant.

The spreading of the rows was similar to the spreading of
the columns, with one exception. The known flows were utilized
in spreading the rows. Use of known flows allows us, for example,
to insure that airlines buy airplanes and railroads buy locomotives,
rather than dividing airplanes and locomotives between them in
proportion to their spending. First we subtracted all the known
flows from the new row controls to get what we may call residual
row controls. Each cell in the old matrix which contained no known
flow was spread in proportion to their residual row controls.
If however, the old cell had any known flows in it, these known
flows were allocated directly, and the residual in the old cell
was spread in proportion to the residual row controls of the rows
not containing known flows in that column.

Suppose, for example, that old row number 25 was to be spread into new rows 35, 36, and 37. Let us call the old matrix A and the new matrix B. Since the spreading must be done a column at a time, let us assume that column number 5 is currently being dealt with. Suppose further, that there is a known flow in the new matrix at $B_{35,5}$. This situation is described in figure one.

Column 5			Residual Row Controls
Known Flow	New Row 35	RC_{35} – Known Flows In 35 = RRC_{35}	
Old Row 25	New Row 36	RC_{36} – Known Flows In 36 = RRC_{36}	
	New Row 37	RC_{37} – Known Flows In 37 = RRC_{37}	

Figure 1

$B_{35,5}$ is easy to specify: its value is simply that of the known flow. $B_{36,5}$ is equal to the value of old $B_{25,5}$ less the known flow and multiplied by a ratio of the residual row controls for rows without known flows in column 5. In symbols:

$$B_{36,5} = (A_{25,5} - B_{35,5}) \cdot \frac{RRC_{36}}{RRC_{36} + RRC_{37}}$$

The spreading of the columns insures that the new columns have the right column sums. The same is not true of the row spread when there are known entries.

The only problem remaining, therefore, is to insure that the sum of each row equals the row control for that row, while keeping the sum of each column equal to the column control for that column. This dual equality was obtained by "balancing" the matrix. The

balancing began with the rows. Each row was summed and a ratio
of the row control to the sum was found for each row. Each row
was then multiplied by the ratio for that row, thus forcing the
sum of each row to equal to its row control. With this procedure
completed, the sum of the columns no longer equaled the column
controls, so that the same process was applied to them. By moving
from rows to columns, back and forth, the adjustments become
smaller until the matrix is balanced. The known flows are then
inserted and the matrix is finished.

Detailed Explanation of the Estimation of Capital Equipment Expenditures
Column Controls

(1) Agriculture

Source: Farm Income Statistics U.S.D.A.

    $1310. Motor Vehicles, Total 1967
    2799. Other Machinery & Equipment, 1967
    4190. Total Producers' Durable Equipment (PDE) (x1000)

(2) Mining

Source: Census of Mineral Industries, 1963

    $75.2 Metal Mining
     8.1   Anthracite
    152.2 Bituminous
    157.1 Non-metals
    392.6 Mining PDE; except Oil & Gas, 1963

Source: Survey of Current Business, January 1970

    $1270. Mining New Plant and Equipment (NP&E), 1963
     1650. Mining New Plant and Equipment (NP&E), 1967

PDE for 1967 is estimated by increasing the 1963 figure by the same
percentage as the increase in NP&E.

$$PDE_{1967} = \frac{NP\&E_{1967}}{NP\&E_{1963}} \times PDE_{1963} = \$510.7$$

(3) Petroleum

Source: <u>Census of Mineral Industries, 1963</u>

    $743.4 PDE, 1963

The 1963 equipment figure was expanded to 1967 by increasing it
by the same proportion as the increase in the sale of oilfield
machinery.

Source: <u>Census of Manufactures, 1967</u>

    $572.7 Oilfield Machinery, 1963
    660.1 Oilfield Machinery, 1967

$$PDE_{1967} = \frac{MACH_{1967}}{MACH_{1963}} \times PDE_{1963} = \$856.8$$

(4) Construction

Source: <u>Survey of Current Business</u>, January 1970

    $14590. NP&E, Commercial and Other, 1967
    10990. NP&E, Commercial and Other, 1963
    1700. NP&E, Construction, 1963

Construction NP&E was 15.5% of Commercial and Other, NP&E. Using
that percentage on 1967 Commercial and Other, we get: Construction
NP&E, 1967=$2256.9.

Source: <u>Capital Flow Matrix, 1958</u>

PDE expenditures for the Construction Industry were 97% of NP&E.
PDE for Construction in 1967 = 97% of NP&E for 1967 = $2189.2.

(5-79) Manufacturing

Source: <u>Census of Manufactures</u>, 1967

NP&E for four-digit industries were found.

Source: <u>Annual Survey of Manufactures, 1966</u>

NP&E and PDE for four-digit industries, for 1964, 1965, and 1966
were found, 1967 PDE was estimated as follows:

$$PDE_{1967} = NP\&E_{1967} \times \dfrac{\sum\limits_{64}^{66} PDE}{\sum\limits_{64}^{66} NP\&E}$$

The four-digit PDE's were then aggregated into industries numbered 5 through 79.

(80-84) Transportation

The column controls for these industries were found by Charles Bausell by direct investigation into the Transportation Industries.

(85) Telephone, Telegraph, & Communication

Source: Survey of Current Business, January 1970

$6340. NP&E, 1967

Source: Statistical Abstract of the United States

$1638. Construction, 1967

$$PDE_{1967} = NP\&E_{1967} - Construction_{1967} = 4702.$$

(87) Electric Utilities

Source: Survey of Current Business, January 1970

$6750. NP&E

Source: Statistical Abstract of the United States

$6825. 1966 Public Utilities Construction
3060. 1966 Electric Utilities
6967. 1967 Public Utilities

1967 Electric Utilities Construction is estimated by:

$$Public\ Utilities\ Construction_{1967} \times \frac{Electric\ Construction_{1966}}{Public\ Utilities\ Construction_{1966}}$$

= $3123.7

1967 PDE = 1967 NP&E - 1967 Construction = $3626.3

(88) Natural Gas & Water

Source: Survey of Current Business, January 1970

    $2000. NP&E

Source: Statistical Abstract of the United States

    $6825. Public Utility Construction, 1966
     1758. Gas & Water Construction, 1966
     6967. Public Utility Construction, 1967

1967 Gas & Water Construction is estimated by:

$$\text{Gas \& Water Construction}_{1967} \times \frac{\text{Gas \& Water Construction}_{1966}}{\text{Public Utilities Construction}_{1966}}$$

1967 PDE = 1967 NP&E - 1967 Construction = $207.5

(90) Wholesale & Retail Trade

Source: Survey of Current Business, January 1970

In 1963 Wholesale & Retail Trade was 44.04% of Commercial and Other.

    $14590. NP&E Commercial and Other, 1967
    x44.04%
    $ 6425. NP&E Wholesale & Retail Trade 1967

Source: Capital Flow Matrix, 1958

PDE was 69.6% of NP&E

    $6425
    x69.6
    $4472.   PDE 1967

Some manufacturers are active in Wholesale and Retail Trade.

Source: Survey of Current Business, January 1970

    $28150. NP&E for Manufacturers
    - 5080. NP&E for Petroleum
    $23430

Source: Census of Manufactures

    $20268.   NP&E for Manufacturers
    - 1004.   NP&E for Petroleum
    ‾19264

    $23430.
    -19264.
    $ 4166.   NP&E for manufacturers outside of Manufacturing

Source: Capital Flow Matrix, 1958

PDE for Trade was 69% of NP&E. Applying that percentage to NP&E for manufacturers outside of Manufacturing:

    $4166
      69%
    $2895

This figure is considered part of Wholesale and Retail Trade, so that total Trade PDE:

    $2895.   Wholesale & Retail Trade by Manufacturers
    $4472.   Wholesale & Retail Trade by Non-Manufacturers
    $7367.   Wholesale & Retail Trade

The renting of computers by the Electronics Industry is Trade, and since it is being placed in another category (Computer Rental), it should be subtracted from Wholesale & Retail Trade. Derivation of Computer Rental PDE is given later in this paper.

    $7367.   Wholesale & Retail Trade, PDE
    -1508.   Computer Rental, PDE
    $5859.   New Wholesale & Retail Trade, PDE

(91)   Finance and Insurance

Source: Survey of Current Business, January 1970

Finance & Insurance is 13.65% of Commercial and Other.

    $14590.   NP&E Commercial and Other, 1967
    x13.65%
    $ 1991.   NP&E for Finance and Insurance, 1967

Source: Capital Flow Matrix, 1958

PDE for Finance and Insurance, in 1958, was 50.8% of NP&E.

    $1991.
      50.8%
    $1012.   PDE
    +1829.5   for balancing
    $2841.5   Adjusted PDE

(92) Services

Source: Survey of Current Business, January 1970

$14590. NP&E Commercial and Other, 1967
10990. NP&E Commercial and Other, 1963
2960. NP&E Services, 1963

NP&E for Services for 1967 are estimated by assuming that is the same percentage of Commercial and Other as it was in 1963.

$$NP\&E = \frac{2960.}{10990.} \times 14590. = \$3929.6$$

Source: Capital Flow Matrix, 1958

PDE for Services, in 1958, was 48% of NP&E. By assuming the same proportion in 1963:

$3929.6
  49%
$1901.   PDE
+3437.1   Balancing
$5338.1   PDE, Adjusted

(93) Personal Auto

From previous MIFP studies 15% of Passenger Cars are used for business purposes.

Source: Census of Manufactures

$19276.   Sale of Passenger Autos
    15%
  2891.   PDE

(94) Computer Rental

Source: Census of Manufactures

$1905.   Production of Digital Computers
- 205.   Export
$1700.   Domestic use of Computers

From previous MIFP studies 88.7% of Domestic Computers are rented rather than sold.

$1700.
  88.7%
$1508.   PDE

Balancing entries are added to industries 92 and 93 to insure that equipment production equals equipment purchases. This equality is necessary for logical consistancy, the amount sold must equal the amount purchased, and to insure that the Capital Flow Matrix can be balanced. The balancing figure is the difference between the sum of the row controls and column controls.

$54024.   Sum of Row Controls
48757.4 Sum of Column Controls
─────
5266.6 Balance

Balance is allocated to Finance & Insurance and Services in proportion to their PDE's.

INEW	NOLD	RENEW(I)	
1	36	69.60	FLOOR COVERINGS
2	43	6.80	WOOD MILL PRODUCTS
3	45	152.10	HOUSEHOLD FURNITURE
4	46	1600.00	OTHER FURNITURE
5	73	22.40	RUBBER PRODUCTS, EXCLUDING TIRES AND TUBES
6	90	39.60	NON-FERROUS CASTINGS AND FORGINGS
7	93	11.40	METAL BARRELS, DRUMS, AND PAILS
8	95	1094.70	STRUCTURAL METAL PRODUCTS
9	98	18.80	CUTLERY, HAND TOOLS, AND HARDWARE
10	100	235.90	VALVES, PIPE FITTINGS, AND FABRICATED PIPE
11	101	74.70	OTHER FABRICATED METAL PRODUCTS, NEC
12	102	656.30	ENGINES AND TURBINES
13	103	3371.80	FARM MACHINERY
14	104	2585.90	CONSTRUCTION, MINING, AND OIL FIELD MACHINERY
15	105	1169.90	MATERIALS HANDLING MACHINERY
16	106	1573.00	MACHINE TOOLS, METAL CUTTING
17	107	465.40	MACHINE TOOLS, METAL FORMING
18	108	1281.90	OTHER METAL WORKING MACHINERY
19	109	3310.80	SPECIAL INDUSTRIAL MACHINERY
20	110	1146.30	PUMPS, COMPRESSORS, BLOWERS, AND FANS
21	113	1082.80	INDUSTRIAL PATTERNS
22	114	2328.60	COMPUTERS AND RELATED MACHINES
23	115	565.80	OTHER OFFICE MACHINERY
24	116	1858.60	SERVICE INDUSTRY MACHINERY
25	117	13.10	MACHINE SHOP PRODUCTS
26	118	642.30	ELECTRICAL MEASURING INSTRUMENTS
27	119	1557.00	TRANSFORMERS AND SWITCHGEAR
28	120	273.70	MOTORS AND GENERATORS
29	121	102.90	INDUSTRIAL CONTROLS
30	122	327.20	WELDING APPARATUS AND GRAPHITE PRODUCTS
31	123	157.50	HOUSEHOLD APPLIANCES
32	124	83.00	ELECTRIC LIGHTING AND WIRING EQUIPMENT
33	125	187.80	RADIO AND TV RECEIVING
34	127	2120.80	COMMUNICATION EQUIPMENT
35	128	221.50	ELECTRONIC COMPONENTS
36	129	124.40	BATTERIES
37	131	148.40	X-RAY EQUIPMENT AND ELECTRICAL EQUIPMENT NEC
38	132	1115.20	TRUCK, BUS, AND TRAILER BODIES
39	133	6618.70	MOTOR VEHICLES AND PARTS
40	134	2305.00	AIRCRAFT
41	137	573.80	SHIP AND BOAT BUILDING AND REPAIR
42	138	1575.50	RAILROAD EQUIPMENT
43	139	227.40	CYCLES AND PARTS AND TRANSPORTATION EQUIPMENT NEC
44	140	124.00	TRAILER COACHES
45	141	173.40	ENGINEERING AND SCIENTIFIC INSTRUMENTS
46	142	345.70	MECHANICAL MEASURING DEVICES
47	143	251.80	OPTICAL AND OPHTALMIC GOODS
48	144	402.60	MEDICAL AND SURGICAL INSTRUMENTS
49	145	545.30	PHOTOGRAPHIC EQUIPMENT
50	146	.70	WATCHES, CLOCKS, AND PARTS
51	148	295.20	TOYS, SPORTING GOODS, AND MUSICAL INSTRUMENTS
52	150	336.50	MISC. MANUFACTURING, NEC
53	151	332.60	RAILROADS
54	153	461.00	TRUCKING AND MISC. TRANSPORTATION SERVICES
55	154	20.70	WATER TRANSPORTATION
56	155	31.00	AIR TRANSPORTATION
57	159	589.20	TELEPHONE AND TELEGRAPH
58	163	3692.00	WHOLESALE TRADE
59	164	3323.90	RETAIL TRADE
60	166	1.70	INSURANCE

PROCESS OF BALANCING

ROW CONTROLS

69.6	5.8	152.1	1600.0	22.4	.0	11.4	1094.7	18.8	235.9
74.7	.0	271.8	1893.2	1169.9	1573.0	465.4	1281.9	1430.8	1146.3
1082.8	620.6	565.8	1104.0	13.1	642.3	141.4	273.7	102.9	327.2
157.5	83.0	187.8	228.9	221.5	124.4	45.9	1115.2	2796.3	135.3
353.8	309.2	163.0	124.0	173.4	345.7	251.8	119.1	545.3	.7
295.2	336.5	332.6	461.0	20.7	31.0	588.2	3692.0	3323.8	1.7

COLUMN CONTROLS

928.7	246.2	428.6	2189.0	144.3	76.9	28.2	106.4	118.0	61.2
39.2	42.2	250.2	140.7	27.8	69.4	28.6	41.3	33.4	30.5
156.3	118.2	89.0	13.6	14.6	54.1	674.8	59.7	186.4	92.2
998.7	100.7	132.3	749.0	106.0	65.9	33.4	288.8	94.0	97.0
204.9	14.2	30.8	123.3	347.8	1676.2	656.1	179.0	29.3	166.9
225.5	162.0	128.4	103.6	180.0	155.7	124.5	220.3	85.0	135.8
178.7	91.1	142.4	97.4	104.0	59.4	270.7	260.0	68.9	646.5
472.1	47.3	31.0	12.6	10.4	38.8	37.1	69.5	101.1	356.3
180.0	53.6	66.0	51.0	2806.1	.0	1554.1	244.0	.0	6768.6
1140.0	3888.0	.0	.0						

ROW ADJUSTMENT FACTORS

```
-.015 -.912 -.285  .088 -.755  .000 -.445 -.154  .156  .156  .156  .000 -.119  .309  .505  .173  .173  .173 -.018 -.050
-.050 -.269 -.269 1.820 -.989 -.534 -.120 -.534 -.534 -.534  .010 1.159 -.901 -.105 3.272  .742  .742 -.520 -.481 -.780
-.516 -.516 -.506 -.516 -.237 -.237 2.730  .440 2.730 -.237  .455  .455 -.111 -.111 -.111 -.111 -.421  .040  .040  .040
```

COLUMN ADJUSTMENT FACTORS

```
-.447  .222  .156 -.074  .261 -.236 -.674 -.191  .142 -.402  .032  .007  .007  .007  .315 -.425  .044  .044 -.407  .060
 .044  .129  .615  .012 -.671  .000  .319 -.177 -.105 -.574  .115  .115 -.005 -.005 -.007 -.007  .011  .088 -.313  .035
 .035  .029  .064  .252  .008 -.018 -.009 -.044 -.040 -.040 -.051 -.029 -.098  .082 -.031 -.037  .294 -.005 -.063  .138
 .080  .018  .018  .117  .023 -.155  .035  .122  .021  .028  .031  .058  .058  .058 -.015 -.015 -.015 -.207  .072 -.478
-.721 -.530 -.952  .537  .333  .000 -.215  .724  .000  .316  .217  .226 1.084  .369
```

KOUNT   1 RMAX   3.2721 CMAX   1.0844

ROW ADJUSTMENT FACTORS

```
-.076  .063 -.077 -.129 -.192  .000 -.006  .090  .119  .059  .064  .000 -.042  .072  .086 -.001 -.001 -.001 -.070 -.027
-.027 -.071 -.071  .423 -.236  .012 -.140  .016  .027  .015 -.161 -.045 -.218  .062 -.077  .250  .264 -.050 -.087  .631
2.069 2.069 2.150 2.103 -.084 -.085 -.033  .026 -.034  .736 -.186 -.186  .006  .006  .219  .153 -.250  .001  .001 1.579
```

COLUMN ADJUSTMENT FACTORS

```
-.030 -.142 -.046 -.055 -.002 -.100 -.066 -.105 -.105 -.087 -.070 -.036 -.073 -.068  .067 -.023  .083  .077 -.009  .068
 .013 -.042 -.042  .043  .034  .000 -.035  .018  .056  .035 -.055 -.047  .019  .010  .032  .038  .052 -.086  .015  .034
 .028  .035  .050 -.031 -.039 -.009  .000  .005 -.009 -.023  .005 -.026 -.043  .014 -.047 -.017 -.014 -.024  .005  .050
 .018 -.002 -.002 -.019  .017  .023  .018  .011  .010  .006 -.037  .008  .008  .024  .130  .023  .023  .029  .023 -.110
-.469 -.096 -.446 -.444  .087  .000 -.026 -.016  .000  .039  .015  .057  .000  .000
```

KOUNT   2 RMAX   2.1497 CMAX   .4692

ROW ADJUSTMENT FACTORS

```
-.028  .011 -.022 -.027 -.032  .000  .032  .028  .025  .023  .028  .000 -.019  .043  .022  .002  .002  .002 -.010  .020
 .020 -.009 -.009  .371 -.038 -.008 -.030 -.010 -.010 -.009 -.036 -.028 -.075 -.003 -.028 -.004 -.006 -.023 -.028  .123
 .225  .225  .235  .227 -.017 -.016 -.041  .029 -.040 -.054 -.039 -.039 -.005 -.005 -.012 -.011 -.080 -.006 -.006 -.041
```

COLUMN ADJUSTMENT FACTORS

```
-.007 -.044 -.024 -.029 -.004 -.027 -.025 -.027 -.027 -.025 -.025 -.018 -.020 -.019  .009 -.007  .010  .010 -.006  .012
```

```
-.001 -.018 -.018  .004 -.000  .000 -.022 -.004  .017  .025 -.029 -.029 -.007 -.008 -.000 -.000  .005 -.033 -.007 -.002
-.002  .003  .006 -.014 -.023 -.009 -.005 -.000 -.007 -.007 -.001 -.009 -.012 -.002 -.015 -.006 -.005 -.007 -.000  .008
 .002 -.003 -.003 -.007  .001  .007  .002  .001 -.000  .001 -.005  .000  .000  .000  .004  .004  .004  .013  .001 -.026
-.134 -.026 -.130 -.129  .032  .000 -.005 -.003  .000  .009  .003  .018  .000  .000

KOUNT    3RMAX     .2352 CMAX    .1337

ROW ADJUSTMENT FACTORS
-.009  .004 -.007 -.008 -.007  .000  .008  .010  .010  .011  .011  .000 -.008  .022  .007  .005  .005  .005  .002  .013
 .013 -.001 -.001  .018 -.009 -.005 -.011 -.006 -.006 -.005 -.009 -.011 -.030 -.002 -.010 -.010 -.010 -.007 -.008  .023
 .043  .043  .045  .044 -.004 -.004 -.015  .014 -.015 -.018 -.011 -.011 -.001 -.001 -.003 -.002 -.031 -.001 -.001 -.011

COLUMN ADJUSTMENT FACTORS
-.003 -.012 -.009 -.015 -.003 -.008 -.008 -.008 -.008 -.007 -.007 -.006 -.007 -.007  .001 -.003 -.001 -.001 -.002 -.000
-.002 -.007 -.007 -.003 -.002  .000 -.010 -.004  .003  .008 -.011 -.011 -.006 -.006 -.004 -.003 -.002 -.010 -.006 -.005
-.005 -.003 -.001 -.006 -.011 -.006 -.005 -.003 -.004 -.004 -.003 -.005 -.005 -.003 -.006 -.004 -.003 -.004 -.003  .001
-.001 -.003 -.003 -.004 -.003  .001 -.002 -.002 -.003 -.002 -.002 -.001 -.001 -.001 -.001 -.001 -.001  .002 -.002 -.007
-.031 -.007 -.030 -.030  .011  .000 -.002 -.001  .000  .002  .001  .005  .000  .000

KOUNT    4RMAX     .0454 CMAX    .0309

ROW ADJUSTMENT FACTORS
-.002  .003 -.002 -.002 -.001  .000  .003  .004  .004  .005  .004  .000 -.002  .011  .003  .004  .004  .004  .003  .006
 .006  .001  .001  .006 -.002 -.001 -.003 -.001 -.001 -.001 -.002 -.003 -.010  .000 -.003 -.004 -.004 -.002 -.002  .006
 .011  .011  .011  .011 -.000 -.000 -.004  .006 -.004 -.005 -.003 -.003  .001  .001 -.000  .000 -.011  .001  .001 -.003

COLUMN ADJUSTMENT FACTORS
-.002 -.004 -.004 -.008 -.002 -.003 -.003 -.003 -.003 -.003 -.003 -.003 -.003 -.003 -.001 -.002 -.002 -.002 -.002 -.002
-.002 -.004 -.004 -.003 -.002  .000 -.005 -.003 -.001  .002 -.004 -.005 -.004 -.004 -.003 -.003 -.002 -.004 -.004 -.003
-.003 -.003 -.002 -.003 -.005 -.004 -.004 -.003 -.003 -.003 -.003 -.003 -.003 -.002 -.003 -.003 -.002 -.003 -.003 -.001
-.002 -.003 -.003 -.003 -.003 -.001 -.002 -.002 -.003 -.002 -.002 -.001 -.001 -.002 -.002 -.002 -.002 -.001 -.002 -.003
-.008 -.003 -.008 -.008  .003  .000 -.001 -.001  .000 -.000 -.001  .001  .000  .000

KOUNT    5RMAX     .0113 CMAX    .0084

ROW ADJUSTMENT FACTORS
 .000  .002  .000  .000  .001  .000  .002  .002  .002  .003  .003  .000  .000  .006  .002  .003  .003  .003  .002  .003
 .003  .001  .001  .003  .000  .000 -.000  .000  .000  .000  .000 -.000 -.003  .001  .000 -.001 -.001  .000  .000  .003
 .004  .004  .004  .004  .001  .001 -.000  .003 -.000 -.001  .000  .000  .001  .001  .001  .001 -.003  .001  .001  .000

CUMULATIVE ROW ADJUSTMENT
 .875  .095  .639  .914  .190 1.000  .577  .964 1.348 1.283 1.289 1.000  .820 1.522 1.691 1.188 1.188 1.188  .910  .966
 .966  .674  .674 4.618  .002  .460  .724  .466  .471  .465  .808 1.978  .068  .947 3.783 2.136 2.158  .442  .456  .415
1.926 1.926 2.040 1.951  .635  .635 3.392 1.555 3.391 1.225 1.124 1.124  .891  .891 1.070 1.013  .382 1.036 1.036 2.536

CUMULATIVE COLUMN ADJUSTMENT
 .530  .988 1.062  .931 1.243  .662  .294  .696  .983  .527  .926  .944  .905  .911 1.416  .556 1.137 1.131  .582 1.143
1.052 1.051 1.503 1.053  .339 1.000 1.228  .329  .964  .456 1.008 1.016  .998  .988 1.018 1.023 1.066  .948  .686 1.059
1.052 1.083 1.120 1.180  .921  .959  .378  .354  .938  .926  .946  .930  .946 1.090  .902  .935 1.263  .959  .935 1.204
1.033 1.007 1.007 1.091 1.038  .971 1.051 1.171 1.026 1.031  .985 1.064 1.064 1.080 1.114 1.008 1.008  .828 1.093  .448
 .123  .410  .122  .717 1.513 1.000  .756 1.695 1.000 1.381 1.240 1.327 2.084 1.369
         BALANS
         BALANS
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