

# **MoveReg Guide**

A Program for Seasonal Adjustment of Weekly Time Series Data  
with Moving Seasonality

Version 3.01

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# FORTRAN Program Information

MoveReg<sup>1</sup> is a FORTRAN program originally written by Bill Cleveland to seasonally adjust weekly economic time series data. The FORTRAN code was modified by staff at the Bureau of Labor Statistics. An optional SAS interface was added to simplify execution and to produce diagnostic graphs.

## A. Run information

### 1. Execution

The FORTRAN program is executed at the command line and expects to find CONTROL.TXT and DATA.TXT (see below) in the same folder that **movereg.exe** (**movereg** under UNIX) is located. Output files are also written to the same folder. Type **movereg** at the command prompt to execute.

Errors can be hard to track down without experience in running the program. Obvious errors can be that the beginning and ending dates in the input files are incorrect or different in the two input files. Some error messages that scroll up your screen often indicate issues with one of the input files. An error in one of the inputs files may be indicated in **summary.out** (see below).

### 2. Input files

#### DATA.TXT (data input)

Maximum number of observations as compiled is 2500 (depending on the number of regressors). The data are first-differenced and logged by default.

Truncated Example:

```
ic
      1149  52  1988   01   30  2010   01   30   7   0
(46x,f8.0)
30JAN1988      ic          1 30  1988   5          1   395000
06FEB1988      ic          2  6  1988   6          2   381000
13FEB1988      ic          2 13  1988   7          3   335000
20FEB1988      ic          2 20  1988   8          4   316000
27FEB1988      ic          2 27  1988   9          5   324000
05MAR1988      ic          3  5  1988  10          6   312000
12MAR1988      ic          3 12  1988  11          7   294000
19MAR1988      ic          3 19  1988  12          8   276000
26MAR1988      ic          3 26  1988  13          9   269000
...
```

Set up DATA.TXT the same way as above.

Key:

Line 1: title, identifying info  
Line 2: NOBS, NPER, KKBYSR, KKBMO, LLYR, LLMO, LLDAY, IWKD, KBB  
number of observations, number of periods, start year, start month, start day, end year,  
end month, end day, day of week that is referenced, '0'  
Line 3: FORTRAN input format (change as needed)  
Line 4: date, variable name, month, day, year, week of year, cumulative week, data value  
(@46, f8.0)

---

<sup>1</sup> Forecasts of weekly data can be produced with an earlier FORTRAN program described in Cleveland (1986) that is available on request. The earlier program only produces fixed seasonal factors but has more modeling options. MoveReg produces forecasts of the seasonal factors but not for the original series.

User-defined variables (if any) follow the input data series. An example how to code an event 3 is below. Note that the variable is zero except when Christmas falls in week 53. The settings in the lines 2 and 3 are the same as for the input series above. After the first three lines, FORTRAN only reads in the last column with the data value. The other columns are helpful but not required.

```
ic USER FACTORS FOR CHRISTMAS IN WEEK 53
1253 52 1988 01 30 2012 1 28 7 0
(46x,f6.0)
XMAS IN WEEK 5 January 16 1988 3 1 0
XMAS IN WEEK 5 January 23 1988 4 2 0
XMAS IN WEEK 5 January 30 1988 5 3 0
XMAS IN WEEK 5 February 6 1988 6 4 0
XMAS IN WEEK 5 February 13 1988 7 5 0
XMAS IN WEEK 5 February 20 1988 8 6 0
...
XMAS IN WEEK 5 December 3 1988 49 47 0
XMAS IN WEEK 5 December 10 1988 50 48 0
XMAS IN WEEK 5 December 17 1988 51 49 0
XMAS IN WEEK 5 December 24 1988 52 50 0
XMAS IN WEEK 5 December 31 1988 53 51 1
XMAS IN WEEK 5 January 7 1989 1 52 0
XMAS IN WEEK 5 January 14 1989 2 53 0
...
```

Key:

Line 1: title of user variable

Line 2: number of observations, number of periods, start year, start month, start day, end year (include forecasts), end month, end day, '7', '0'

Line 3: FORTRAN input format

Line 4: variable title, month in letters, day, year, week in year, cumulative week, data value

More user-defined variables can follow.

Note that the user-defined variables have 104 more observations than the data series to account for the number of forecasts. The number of forecasts is always 2\*NPOR or 2\*52=104 for weekly data.

### CONTROL.TXT (control input)<sup>2</sup>

Line	Description
1	NPOR 52 for weekly, 12 for monthly
	LOC 1 for fame database <sup>3</sup> , 0 for ascii file (data.txt)
2	NOUTAO number of additive outliers (AO)
	NOUTLS number of level shifts (LS)
	HOL number of holidays (including user-defined)
	NFILT width of detrending filter (set to 2 for 1-B)
	MXTYPE 1 for trapezoidal weighting, 2 for ARIMA weighting <sup>4</sup>
3	PHI AR parameter (only when MXTYPE=2)
	SIGR variance ratio (only when MXTYPE=2)

<sup>2</sup> See Cleveland and Scott (2007) for help on how to determine phi, sigr, and nfs.

<sup>3</sup> The BLS version of the program does not support FAME.

<sup>4</sup> The trapezoidal weighting option has not been tested by BLS. ARIMA weighting is recommended.

- 4 NFS no. of terms in trig seasonal = 2 x no. of frequencies (NPER=52),  
use for annual effects<sup>5</sup>
- 5 KBYR,KBMO,KBDAY,LYR,LMO,LDAY  
starting & ending dates for input data (4-digit year, month, day of  
month<sup>6</sup>)
- 6 dates of AOs (week & year for each)
- 7 holiday codes preceded by '0' for each user variable
- 8 information on built-in holidays, 1 line per holiday:  
length of holiday effect, position of holiday in weight  
pattern, weight pattern

Example:

```

52 0          weekly data, ascii file
12 1 13  2 2  noutao noutls hol nfilt mxtype
0.4 16       phi sigratio
60           num of terms in trig seasonal
1988 01 30 2010 01 30 7
40 1989 30 1992 30 1993 52 1993  5 1994  3 1996
38 2001 39 2001 40 2001 41 2001 42 2001 43 2001
1 2010
0 0 0 3  10  8  1  4  7  2 12 11  9
8  1  0 0 0 0 0 0 1. 1.      New Year
1  1  1.                    M.L. King
1  1  1.                    President's Day
8  8  1.  0 0 0 0 0 0 0      Easter
1  1  1.                    Memorial Day
1  1  1.                    July 4
2  2  0. 1.                 Labor Day
1  1  1.                    Columbus Day
1  1  1.                    Veterans Day
1  1  1.                    Thanksgiving

```

Key:

- Line 1: '52' is for weekly data and '0' is to read in the data with data.txt (ascii file)
- Line 2: 12 AOs, 1 LS, 13 holidays (including user-defined), 2 for width of detrending filter (=1<sup>st</sup> dif),  
and 2 for ARIMA weighting
- Line 3: '0.4' for AR coefficient and '16' for variance ratio in weight model
- Line 4: 60 terms in trig seasonal (30 sine-cosine pairs)
- Line 5: data start year, data start month, data start day, data end year, data end month, data end  
day
- Lines 7-8: Outlier dates (week year) can be specified in as many lines as you need (up to 70). Level  
shift dates follow those for additive outliers. The date for a LS can be in the same line as  
those for AOs. Blank lines are not required if there are no outliers.
- Line 9: Holiday info, one zero for each user-defined variable (as specified in data.txt),  
the holiday codes (see holiday section below) follow in order they are listed with weighting  
patterns starting in the above example in line 10

<sup>5</sup> Within-month effects can also be specified.

<sup>6</sup> Dates are always Saturdays in our examples.

The maximum number of regressors (beginning with version 3.01) is 200 (up from 100 in previous versions). The above example has 88: 60 trig terms, 10 holidays, 3 user-defined events, 13 outliers, an intercept, and a slope term. A summary is displayed in anova.out.

### 3. Holidays<sup>7</sup>

The following examples are for UI weekly data where the weeks are defined by Saturday's date. Note that other weekly series will require different holidays.

Example: New Year's Day

Weight Pattern: 8 1 0 0 0 0 0 1 1

The length of the pattern is 8 days (as indicated in the first column), and the holiday is the first day in the weight pattern (2<sup>nd</sup> column). The eight weights follow and are equally divided between days 7 & 8 (the first six days are zeroes). These days are both in week 2, unless New Year's Day is on Sunday, in which case Jan 7 is in week 1 (a "late" week 1). Thus, the weight all falls on W2, unless January 1 is a Sunday, in which case the weight is equally divided between W1 and W2. The rationale is that activity is diminished in week 1, which by definition always contains New Year's Day. It is diminished less, however, when New Year's Day falls on Sunday and Week 1 ends on Saturday, January 7. Using 0/1 dummy variables, week 2 will always be 1, but week 1 will only be 1 if January 1<sup>st</sup> is a Sunday.

Example: Thanksgiving

1 1 1

The length of the pattern is one day. Thanksgiving (4<sup>th</sup> Thursday in November) is the first and only day in the weight pattern. Thanksgiving is always in week 47 or 48. A 0/1 dummy variable is equivalent.

Example: Labor Day

2 2 0 1

The pattern length is two days. The day before Labor Day has no weight so Labor Day (1<sup>st</sup> Monday in September) gets the full weight. A 1 1 1 design is equivalent. Labor Day falls in either week 36 or 37.

Example: Easter

8 8 1 0 0 0 0 0 0

Easter is always on a Sunday but it can fall anywhere from weeks 12-18. The pattern length here is 8 days. The Sunday before Easter is the first day in the weight pattern, so the week before Easter gets the full weight (probably due to the effects of Good Friday). A 2 2 0 1 pattern is equivalent in this case.

holiday codes (copied from code in txt.f in the deterministic program)

weekly data	monthly data
0 = user supplied series after data	
1 = easter	1 = easter
2 = labor day	2 = Labor Day
3 = new year	3 = pwh easter
4 = memorial day	
5 = april 15 taxes	
6 = christmas	
7 = independence day july 4	

<sup>7</sup> See Cleveland and Scott (2007) for more discussion on holidays.

8 = february holiday  
9 = thanksgiving  
10 = M. L. King  
11 = Veterans Day  
12 = Columbus Day

Holidays can be hard to specify with weekly data. Try using year-over-year plots of the unadjusted series against the seasonally adjusted series (not accounting for the holiday).

#### **4. Outliers**

Additive outliers (AO) and level shifts (LS) can be specified in the control.txt. The AOs (if any) are listed first and then any LSs. The number of AOs and LSs are indicated in line 2 in CONTROL.TXT. The maximum number of AOs and LSs combined is 70.

#### **5. FORTRAN Output files**

##### **ANOVA.OUT**

- sum of squares, F-tests,  $R^2$ , Box-Ljung, outlier estimates, holiday estimates, seasonal estimates, trend estimates
- LS information follows that for AOs under "Outlier estimates."

##### **COEFS.OUT**

- sine and cosine estimates by year for use in other programs
- frequencies are in column 1, years are in column 2, and coefficients are in column 3
- odd-numbered frequencies are for sines and even numbered for cosines

##### **GLOBAL.OUT**

- global regression results

##### **OUTPUT.OUT**

- control input info, table of original data, weight matrix, tables of seasonal factors, seasonally adjusted series, outlier effects, holiday effects

##### **SUMMARY.OUT**

- info related to control input
- original data, recent transformed data, holiday variables and dates in series, outlier locations, detrending filter

##### **RESULTS1.OUT**

- free format for use with other programs
- number of observations, starting & ending dates, sa series, seasonal factors, outlier effects, holiday effects

##### **RESULTS2.OUT**

- space-delimited format for use in other programs
- week, year, sa series, sa factors, unadjusted data, outlier effects, holiday effects

## B. Program structure

### a. Main program

will generate a seasonal design matrix and a pattern of annual weights to get moving parameter estimates of the seasonals. It will also generate design columns with dummies corresponding to the weeks of certain holidays.

Input parameters are from a file called CONTROL.TXT

(In the Fed version, seasonal factors, adjusted series, and holiday factors are put in FAME.)

### b. SR SIGWTS

This subroutine computes a matrix of annual weights for use with a moving regression routine. The weights are based on a signal extraction formula for a trend plus white noise.

The trend model is  $(1-B)(1-\phi*B)z(t) = a(t)$ . The variance ratio of  $e(t)/a(t)$  is  $v$ .

Subroutines:

ADVPH	GSMPRD	MXPRNT	SCLE
CALNDR	HOLXDW	MXSCLE	SCMPRD
DAYWK	INVERT	OMIT	SDUM
DETREN	KING	OUTLOC	SEROUT
DIFF	LABOR	PDSINV	TRENIV
EASTER	LEAPYR	PHSEP	UNDIFF
EXCHNG	MADD	PSEUDO	WKCAL
GETSER	MEAN	PTCOLS	WKITD
GSMEG	MNMAX	RESCLE	WKMxD
			WKSxD

## C. I/O files

Unit	Program variable	File name	Description
5	IN	control.txt	control input
12	AUXIN	data.txt	data input
14	AUXIN2	not used	-
6	IOUT	summary.out	info related to input, ie, run doc
10	IOUT2	output.out	output tables, some control input
11	IOUTP	not used	-
16	AUXOT2	results1.out	data for use in other programs
61	RSLTOUT	results2.out	data for use in other programs
62	COEFOUT	coefs.out	seasonal frequencies coefficients
64	ANOVAOUT	anova.out	diagnostics, model parameters
63	GLOBOUT	global.out	global regression results
18	AUXOUT	not used	-
16	AUXOT2	results1.out	data for use in other programs

## D. Program description

Notes by Stuart Scott on the FORTRAN program follow:

1. Read in control input, set up basic variables, including calendar variables.

- a. I/O unit variables IN, IOUT, AUXIN, AUXIN2, AUXOUT, AUXOT2, IOUT2, IOUTP  
(see B1 for details)
- b. max array sizes IYDIM, IXdIM, ISDIM
- c. calendar variables
  - ifl=1
  - iwkc=7
  - iwk d=7
  - k bday=0
  - l day=0
  - k k bday=0
  - l l day=0
  - ione=1
  - nser=1
  - class=1
  - ten=10.
- d. open I/O files
- e. read control input (Unit 5, CONTROL.TXT) and write to Unit 6, \*.RUN
- f. set up calendar variables

## 2. Read in data (SR GETSER)

LOC=0 in control input directs routine to Unit 12 (DATA.TXT)

write date info to IOUT

- 65 call SR GETSER to read data into array Y  
 check for consistent dates and date range  
 call SR OMIT to achieve complete years after differencing –may be noncalendar years  
 read in week and year of outliers  
 read holiday codes and place in IHOL  
 take log's of data

## 3. Generate design matrix X and matrix XX reflecting weighting

- a. generate weights matrix

if mxtype=2,

call SIGWTS to create arrays XX, WX, SCR (x~XX,a~WX,s~SCR)

call PDSINV:  $XX = XX^{-1}$

- 150-180 generate weights matrix WX, then XX

if mxtype=1, generate WX according to trapezoidal pattern,

- b. generate seasonal and holiday part of design matrix

set up variables to handle projected seasonal factors

- 200-210 call WKITD to generate special holiday, regular holiday, and seasonal variables

- c. call OUTLOC to create columns of 0's with appropriate 1's for outliers

- d. normalize XX to have row sums=1

$XX(i, j) = \text{wt of year } j \text{ in estimating component for year } i, \sum_j XX(i, j) = 1$

- e. compute phase shift (moments about diagonal of XX) & write to Unit 10 (OUTPUT.OUT)

## 4. Difference data and design matrix

- a. call DETREN to create differenced series y2 from y & X2 from X

- b. add columns to X2 with trend effects, constant, linear, and quadratic

## 5. Compute overall regression model



- a. compute beta
    - call GSMPRD to compute  $XPX = X_2'X_2$
    - call PDSINV to compute  $XPX = (X_2'X_2)^{-1}$
    - call GSMPRD to compute  $xy = X_2'y_2$
    - call GSMPRD to compute  $\beta = (X_2'X_2)^{-1}X_2'y$  (selected col's of  $X_2$ )
  - b. compute trend (constant and linear terms only)
    - call GSMPRD to compute trend  $sf = X_2'\beta$
  - c. store holiday effects in  $xb[,1]$ 
    - call GSMPRD to collect holiday effects  $xb[,1] = X_2'\beta$  (selected portions of  $X_2$ ,  $\beta$ )
  - d. store outlier effects in  $xb[,2]$ 
    - call GSMPRD to collect outlier effects  $xb[,2] = X_2'\beta$  (selected portions of  $X_2$ ,  $\beta$ )
6. Create series of "SI ratios" (really S+I)
- a. remove holiday and outlier effects
    - $y = y - xb[,1] - xb[,2]$
  - b. difference variables and remove trend
    - $y_2 = y$
    - call DETREN to difference  $y_2$
    - $y_2 = y_2 - sf$
7. Compute stacked xy vector
- DO 410 loop: for each year,
- call GSMPRD to compute  $xy = X_2'y_2$  (selected portions of each array)
  - scale current portion of  $xy$  by year length
8. Compute reduced  $(X'X)^{-1}$  based on seasonal effects only
- call GSMPRD to compute  $XPX = X_2'X_2$ , using only seasonal variables in  $X_2$
  - scale  $XPX$  by overall (differenced) span length
  - call PDSINV to compute  $XPX = XPX^{-1}$
9. Restore trend, outlier, and holiday effects
- $y_2 = y_2 + sf$
  - $y = y + xb[,1] + xb[,2]$
10. Compute beta coefficients and seasonal component by year (DO 450 loop)
- a. place  $xy$  in  $sft$
  - b. compute weighted vector  $X'Wy$  and place in  $xb[,5]$
- 416-450
- call MXSCLE to apply  $XX$  wt to elts of  $sft$
  - call MADD to place in  $xb[,5]$
  - c. compute beta
    - call GSMPRD to compute  $\beta$  ( $sft$  vector)  $= XPX * xb[,5]$
  - d. compute seasonal component
    - call GSMPRD to compute  $sf = X * sft$
  - e. print table of (time-varying) beta coefficients to RES
11. Compute forecast factors
- call GSMPRD to compute forecast seasonal component
  - append to vector  $sf$
12. Compute quantities on original scale
- a. compute vector of combined seasonal factors (trig seasonal + holiday effects)

sf = sf + xb[,1]

b. exponentiate xb[,1], xb[,2], and sf to create multiplicative factors

13. Compute final combined seasonal component and seasonally adjusted series

a. normalize seasonal component across input span and forecast period

sf = sf/mean(sf)

b. write sf to Unit 10 (OUTPUT)

c. put data on original scale

y = exp(y)

d. compute seasonally adjusted series

y2 = y/sf

14. Compute variance decomposition of (1-B) log y

$$sumZ = \sum_{i=2}^{nobs} (\log(Z_i) - \log(Z_{i-1}))^2, Z = y, sf, \text{ and } y2$$

$$rsq = sums / sumy$$

15. Write out final arrays to AUXOT2, Unit 16 (RESULTS1.OUT)

call SEROUT successively to write SA series (sa), seasonal component (sa factor),  
xb[,2] (outlier effects), and xb[,1] (holiday effects)

## E. Special documentation

### 1. WKCAL

```
subroutine wkcal(iyr,iwkc,nthw,istw,nwks,mo,iday)
c
c      this subroutine relates a data week to the calendar
c      a data week belongs to the year of its calendar label
c
c      inputs:
c      iyr      year   (4 digits)
c      iwkc     day of calendar week which labels data week
c              (1 = sunday)
c      nthw     nth data week of year
c
c      outputs:
c      istw     day of year of day iwkc in first data week in year
c      nwks     no. of data weeks in year   1-53
c      mo,iday  month and day of day iwkc in data week nthw
```

Notes:

ISTW, NWKS determined by IYR, IWKC

MO, IDAY determined by IYR, IWKC, and NTHW

NOUT = NOUTAO+NOUTLS

## E. Source file history

uisam1.for, 1/16/2003, replacing mxrmove.f, 2/10/2002  
uisam2.for, 1/16/2003, replacing movsub.f, 11/28/2001  
movereg.for, replacing uisam1.for and uisam2.for, 8/01/2010

The source code can be easily compiled to run on UNIX and Windows operating systems. We use Lahey-Fujitsu 7.2 for the PC and g77 on Solaris. No special compiler options are required.

The below history of changes to the FORTRAN source code is taken from the beginning of **movereg.for**:

```
c  Changes made by J.L.Fields, Bureau of Labor Statistics
c
c  APR-2005 (ver. 1.01)
c  Minor changes to line length to allow code to compile.
c  Created output files summary.out, results1.out, results2.out, coefs.out
c  to consolidate output in format consistent with users applications.
c
c  MAR-2006 (ver. 2.01)
c  Generate residuals and ANOVA statistics following initial global
c  regression. ANOVA table is only approximate with respect to model
c  components. A stepwise regression would provide a proper analysis.
c  Residuals, and T-scores for factors and residuals, are based on the
c  differenced, logged series. Factors, and standard errors for factors,
c  are reported at the multiplicative level of the original series.
c  Hence,
c    T(outlier)=ln(outlier)/arcsinh[stderr(outlier)].
c  Similarly for holiday effects.
c  Residuals are the natural logs of the cross ratio between the
c  observations and the estimates at the original level.
c
c      ^      ^      ^
c      e=ln[(y y )/(y y )]
c      i   i i+1 i i+1
c
c  Output files are:
c    anova.out for ANOVA statistics and
c    global.out for initial global regression estimates.
c
c  p-values for F-scores and T-scores were obtained from
c  Numerical Recipes:
c    Press, Flannery, Teukolsky, Vetterling, Numerical Recipes,
c    Cambridge University Press, 1998.
c  If you don't have this book, get it. Now. Even if you don't write
c  code, get the book. The authors offer delightfully trenchant insight
c  into coding efficiency that is often sadly lacking these days.
c
c  We will also take this opportunity to point out that for T-scores
c  10~infinity; hence, for any reasonable number of observations
c  your T-scores are really Z-scores. But then you have to code the
c  error function. But since you've taken my advice and bought the
c  afore mentioned Numerical Recipes that shouldn't be a problem.
c
c  2010, version 2.02
```

c edited by T. Evans, BLS  
c Box-Ljung dof changed from 52 to 53 and 104 to 106  
c minor formatting changes  
c minor changes to compile on pc with Lahey compiler  
c added p-values for the Box-Ljung tests  
c July 2010 commented out warning messages for Box-Ljung p-values  
c  
c FEB-2012 (ver. 3.01)  
c In which version JLF returns to fix this and that, and attempts  
c to allow for level-shift type outliers. The maximum number of regressors  
c is now 200.

## SAS Interface Information<sup>8</sup>

### A. Inputs

- a. Input data series (required)
  - i. User-specified name
  - ii. Text or SAS database format
  - iii. Vari
    - 1. Year
    - 2. Month
    - 3. Day
    - 4. Variable (user-specified name)
  - iv. Example

```
1988 1 2 46000
1988 1 9 65000
1988 1 16 57000
1988 1 23 41000
1988 1 30 39000
1988 2 6 38000
```

- b. Outliers.txt (optional)
  - i. Variables
    - 1. Week number
    - 2. Year
  - ii. Example

```
40 1989 30 1992 30 1993 52 1993 5 1994 3 1996 38 2001
40 2001 41 2001 42 2001 43 2001 47 2001 48 2001 37 2005
```

- c. Holidays.txt (optional)
  - i. See description in previous section above
  - ii. Example

```
0 0 0 3 10 8 1 4 7 2 12 11 9
8 1 0 0 0 0 0 0 1. 1. new year
1 1 1. m. l. king
1 1 1. February holiday
8 8 1. 0 0 0 0 0 0 0 Easter
1 1 1. memorial day
1 1 1. july 4
2 2 0. 1. labor day
1 1 1. columbus day
1 1 1. veterans day
1 1 1. Thanksgiving
```

---

<sup>8</sup> The current version of the SAS interface works best with SAS 9.1.3. Using a higher version of SAS may cause the graphs to look distorted. This can be remedied by tweaking the title, legend, and axis heights in **weekly\_graphs.sas**. A version specifically designed for SAS 9.3 should be available sometime in 2012.

d. sa.txt (optional)

Only required for the revisions graph. Turn off the revisions macro in weekly\_defaults.sas if not needed.

i. Variables

1. Month
2. Day
3. Year
4. Revision

ii. Example

```
1 3 2009 44870
1 10 2009 45760
1 17 2009 46730
1 24 2009 47480
1 31 2009 47550
2 7 2009 49480
```

## B. Outputs

- a. See outputs description above
- b. If desired, graphs will be produced in a pdf.
  - i. Title will be user-specified input variable name with data beginning and ending years

## C. Running the Program

1. Copy all programs and files into one folder.
  - a. Input data
    - i. data.txt (required and created by SAS)
    - ii. control.txt (required and created by SAS)
    - iii. outliers.txt (optional)
    - iv. holidays.txt (optional)
    - v. sa.txt (optional)
    - vi. text file or SAS database with input data
  - b. Programs
    - i. weekly.sas
    - ii. weekly\_defaults.sas
      1. Contains default program options which can be modified by user
      2. Option to drop certain graphs from the output pdf if desired
    - iii. weekly\_graphs.sas
    - iv. movereg.exe (movereg for UNIX)
    - v. x12w.exe (x12w for UNIX)
      1. special version of X-12 modified to handle more observations
    - vi. user\_events.sas
      1. Example code of user-defined events, which is appended to bottom of data.txt
      2. Example of user-defined events from data.txt:

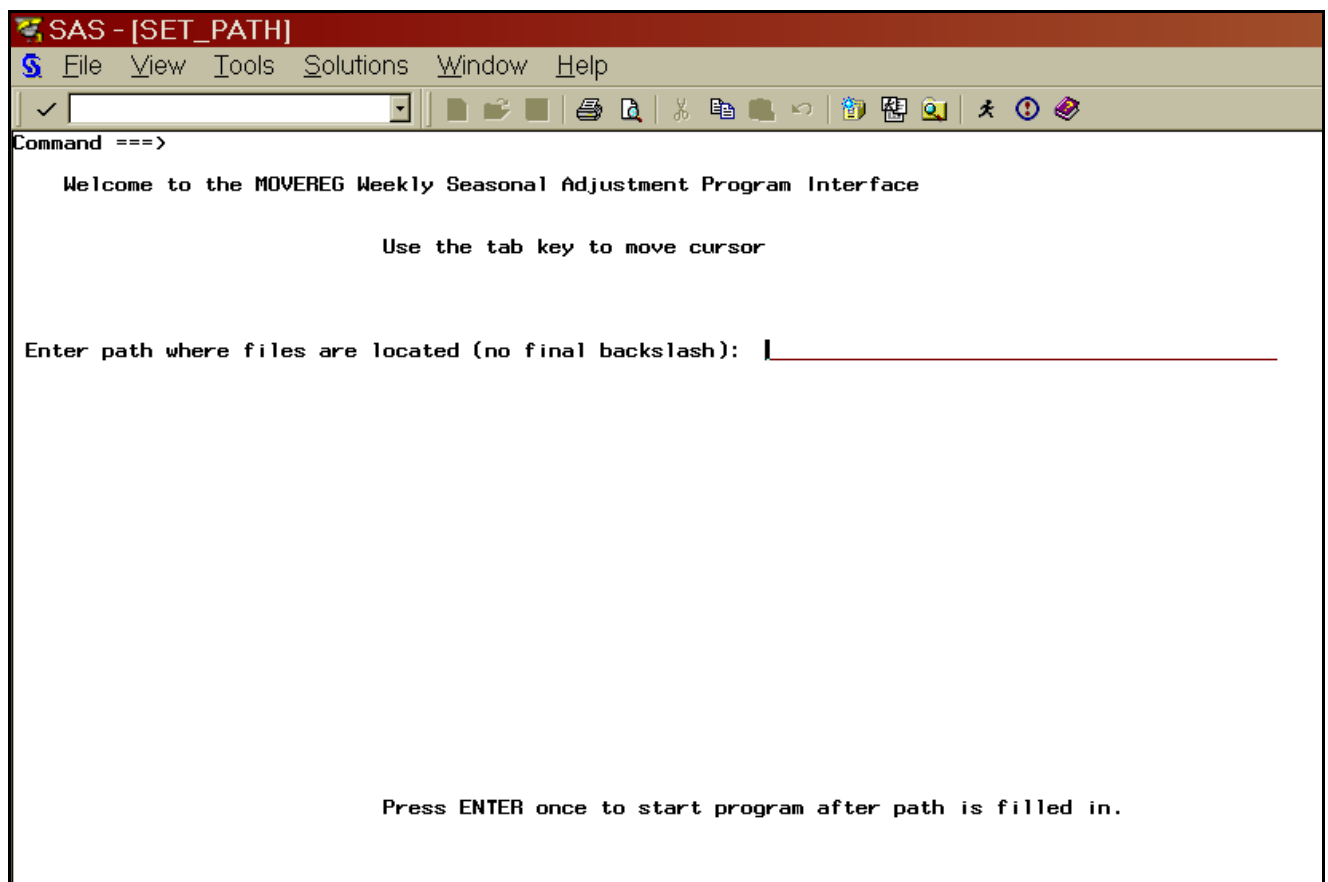
```
ic USER FACTORS FOR JULY 4TH ON WEDNESDAY
1253 52 1988 01 30                2012                1                28 7 0
(46x,f6.0)
```

JULY	4TH	ON	WE	January	30	1988	5	1	0
JULY	4TH	ON	WE	February	6	1988	6	2	0
JULY	4TH	ON	WE	February	13	1988	7	3	0
JULY	4TH	ON	WE	February	20	1988	8	4	0
JULY	4TH	ON	WE	February	27	1988	9	5	0

- vii. create\_control\_file.sas
- viii. create\_data\_file.sas

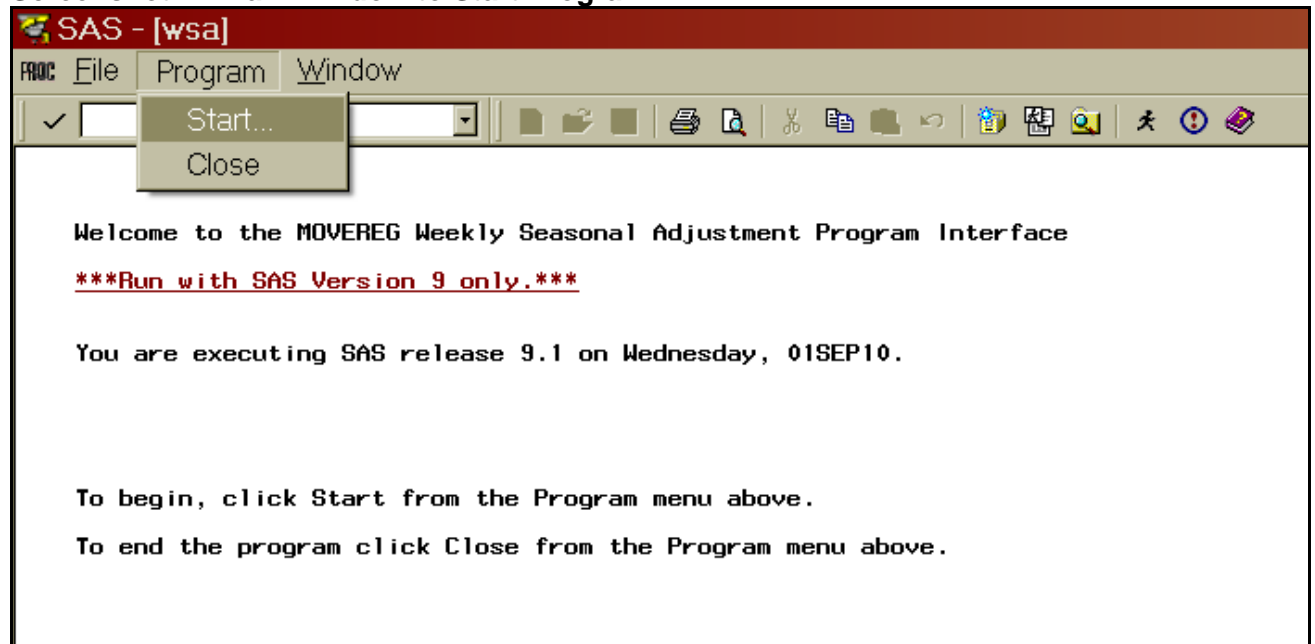
- Execute the SAS program, **weekly.sas**. There are many ways to do this. One way in Windows is to open the program in SAS and then click the **Run** button.
- An initial window will pop up to enter the location of all files (Windows only). Do not put the final backslash. Press **Enter**. A picture of the window is below:

**Screenshot 1: Initial Window to Set Path**



- The main introductory window will pop up. To continue with the program, click on **Program** on the top menu bar, then click **Start**. Screenshot 2 below illustrates the window:

## Screenshot 2: Main Window to Start Program



5. The next window that pops up is the main input window. Screenshot 3 below shows an example of the window. Default values are specified in **weekly\_defaults.sas**.
  - a. Enter the first and last weeks of data (using the date for Saturday of that week).
  - b. Check the box for Graphs if desired, then specify a title for the graphs.
  - c. Enter the variable name that is being seasonally adjusted.
  - d. Enter values for the seasonal period, number of outliers, number of holidays, width of detrending filter, AR parameter, variance ratio, number of seasonal frequencies, and number of forecasts for seasonal factors.
  - e. Specify whether the input data is in text or SAS database format.
  - f. Enter the input data file name.
  - g. Specify if user-defined effects are used.
  - h. Select a scaling factor for the graphs.



### Screenshot 3: Input Window

**Start**

Enter the date for the beginning week to use for seasonal adjustment using the following numerical format: MM/DD/YYYY (2 digits each for month and day and 4 digits for the year)

/  /

Enter the date for the last week to use for seasonal adjustment using the following numerical format: MM/DD/YYYY

/  /

NOTE: When entering dates, use the date for Saturday.

Check box if output desired: ☐ Graphs

Type in a title for graphs:

Enter the name of the input variable (max 8 chars):

If you want to change any of the parameter values, fill in the blanks below.  
If left blank, the default values shown will be used.

	Default	User-Specified
Num of Seasonal Periods (52 or 12):	52	<input type="text"/>
Num of Additive Outliers:	22	<input type="text"/>
Num of Level Shifts:	0	<input type="text"/>
Total Num of Holidays (including user events):	13	<input type="text"/>
Width of Detrending Filter (2 for (1-B)):	2	<input type="text"/>
AR Parameter:	0.4	<input type="text"/>
Variance Ratio:	16	<input type="text"/>
Num of Seasonal Frequencies:	60	<input type="text"/>
Num of Forecasts for Seasonal Factors:	104	<input type="text"/>

Is your input data file a SAS file or text?  
☒ SAS ☐ Text

Enter input data file name:

Did specify any user-defined effects?  
☒ Yes ☐ No

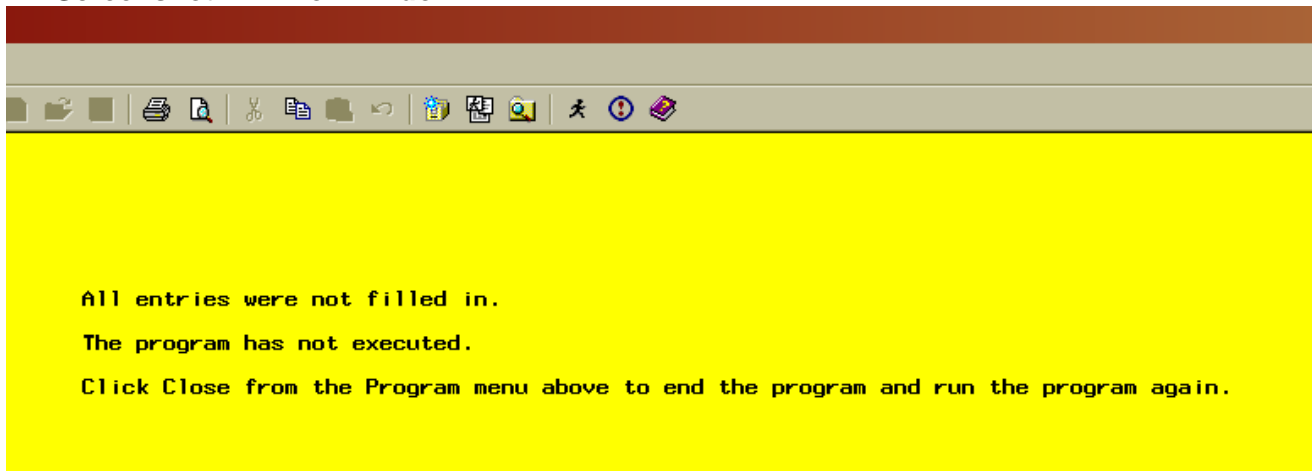
Select factor for scaling in graphs:  
☒ 1000 ☐ 100 ☐ 10 ☐ None

OK

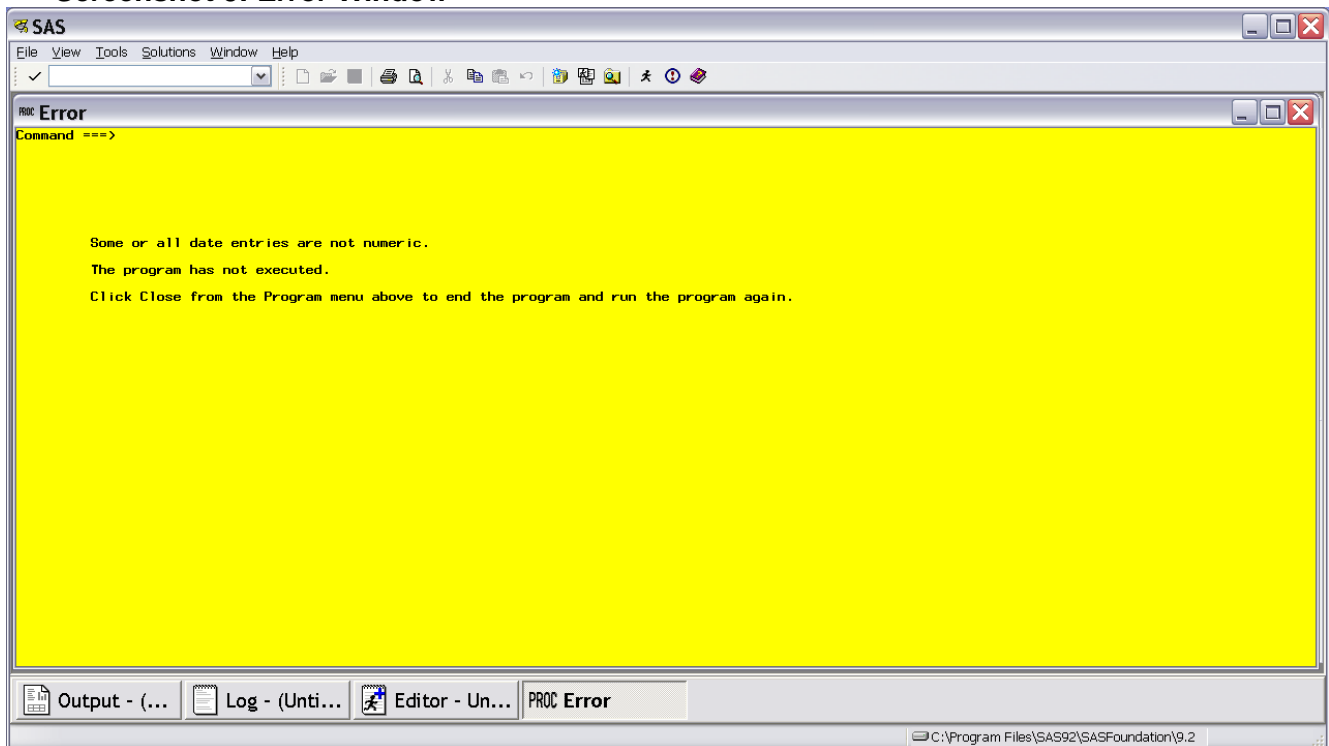
Cancel

- If there is a problem with the inputs, an error window will be displayed with a description of the error. Examples shown here:

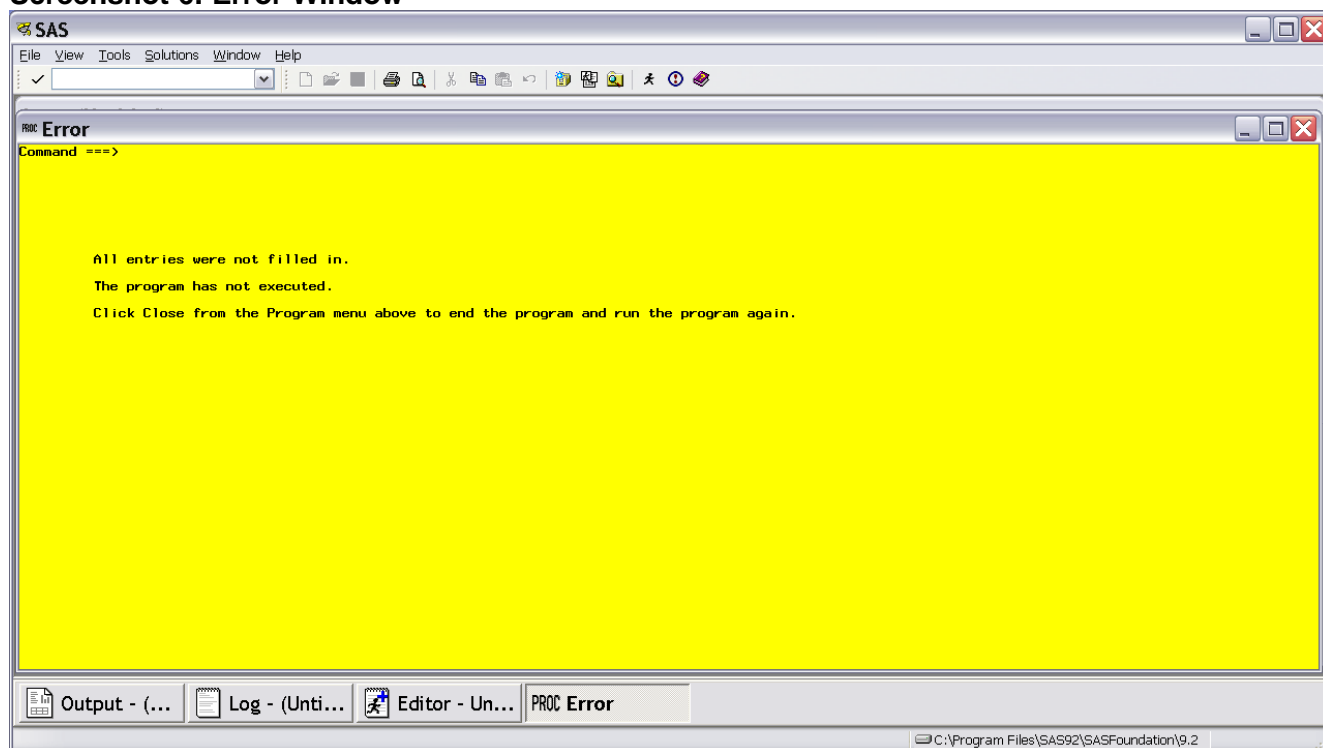
**Screenshot 4: Error Window**



**Screenshot 5: Error Window**



## Screenshot 6: Error Window



## Examples of MoveReg FORTRAN Output

### ANOVA.OUT

MoveReg Version 2.02  
 Execution at 09:11, 03-NOV-2010  
 series: ic  
 series begins: 1988 week: 03  
 series ends: 2008 week: 03  
 output file: anova.out

COMPONENT	DoF	SS	MSS	F	P-Value
Holiday	13	6.7836	0.5218	240.4283	0.0000
Outliers	21	0.8388	0.0399	18.4042	0.0000
Seasonal	60	7.9139	0.1319	60.7731	0.0000
Linear trend	2	0.0001	0.0001	0.0251	0.9752
Model	96	15.6983	0.1635	75.3448	0.0000
Error	948	2.0575	0.0022		
Total	1044	17.7559	0.0170		

R-Square= 88.41%

Box-Ljung statistic (approx. chi-square)

DoF	Q	P-Value
53	285.6069	0.0000
106	458.0014	0.0000

#### Outlier estimates

WK	YEAR	FACTOR	STD ERR	T-Value	P-Value
40	1989	1.1851	0.0342	4.9610	0.0000
30	1992	1.4071	0.0343	9.9661	0.0000
30	1993	1.3450	0.0343	8.6498	0.0000
52	1993	0.8742	0.0347	-3.8770	0.0001
5	1994	1.1307	0.0341	3.5986	0.0002
3	1996	1.1661	0.0350	4.3974	0.0000
38	2001	1.1303	0.0445	2.7507	0.0030
39	2001	1.2821	0.0573	4.3400	0.0000
40	2001	1.1699	0.0628	2.5001	0.0063
41	2001	1.1599	0.0630	2.3569	0.0093
42	2001	1.1276	0.0577	2.0816	0.0188
43	2001	1.1078	0.0445	2.3007	0.0108
47	2001	1.1617	0.0394	3.8066	0.0001
48	2001	1.1567	0.0403	3.6133	0.0002
37	2005	1.2903	0.0439	5.8071	0.0000
38	2005	1.2482	0.0553	4.0099	0.0000
39	2005	1.0741	0.0587	1.2182	0.1117
40	2005	1.1293	0.0553	2.1984	0.0141
41	2005	1.1097	0.0440	2.3680	0.0090
1	2006	1.1045	0.0349	2.8489	0.0022
2	2007	0.8652	0.0349	-4.1494	0.0000

#### Holiday estimates

HOLIDAY	FACTOR	STD ERR	T-Value	P-Value
User	1.1139	0.0212	5.0856	0.0000
User	1.0495	0.0200	2.4213	0.0078
User	0.9140	0.0258	-3.4890	0.0003

New Years	1.0843	0.0100	8.1146	0.0000
MLK Day	0.8308	0.0157	-11.8244	0.0000
Presidential	0.9409	0.0152	-4.0014	0.0000
Easter	0.9574	0.0076	-5.7313	0.0000
Memorial Day	0.8902	0.0161	-7.2418	0.0000
4th of July	0.9583	0.0162	-2.6349	0.0043
Labor Day	0.8897	0.0166	-7.0583	0.0000
Columbus Day	0.9577	0.0160	-2.7051	0.0035
Veterans Day	0.8696	0.0146	-9.5431	0.0000
Thanksgiving	0.7971	0.0160	-14.1555	0.0000

# Seasonal estimates

TERM	FACTOR	STD ERR	T-Value	P-Value
1	0.2678	0.1700	1.5758	0.0577
2	1.7195	0.1702	10.1055	0.0000
3	-0.0193	0.0859	-0.2249	0.4111
4	1.6626	0.0860	19.3424	0.0000
5	-0.2331	0.0586	-3.9788	0.0000
6	0.0453	0.0586	0.7739	0.2196
7	0.4509	0.0450	10.0135	0.0000
8	0.5677	0.0451	12.5855	0.0000
9	0.0136	0.0366	0.3723	0.3549
10	-0.1022	0.0374	-2.7326	0.0032
11	0.3789	0.0314	12.0475	0.0000
12	0.1433	0.0318	4.5057	0.0000
13	0.0477	0.0275	1.7350	0.0415
14	0.1002	0.0287	3.4951	0.0002
15	0.5205	0.0257	20.2835	0.0000
16	-0.0043	0.0254	-0.1681	0.4333
17	-0.0400	0.0244	-1.6391	0.0508
18	0.0582	0.0222	2.6161	0.0045
19	0.1459	0.0222	6.5595	0.0000
20	0.0464	0.0217	2.1390	0.0163
21	-0.1113	0.0213	-5.2332	0.0000
22	0.0879	0.0208	4.2275	0.0000
23	0.4152	0.0209	19.8324	0.0000
24	-0.0229	0.0192	-1.1960	0.1160
25	-0.0832	0.0202	-4.1245	0.0000
26	0.1306	0.0178	7.3380	0.0000
27	-0.0726	0.0186	-3.9021	0.0001
28	0.0060	0.0179	0.3343	0.3691
29	-0.0879	0.0180	-4.8903	0.0000
30	0.0457	0.0174	2.6292	0.0043
31	-0.0403	0.0164	-2.4555	0.0071
32	-0.1105	0.0178	-6.2000	0.0000
33	-0.0838	0.0161	-5.2139	0.0000
34	0.0649	0.0170	3.8298	0.0001
35	-0.1139	0.0161	-7.0767	0.0000
36	-0.0029	0.0161	-0.1809	0.4283
37	-0.0061	0.0149	-0.4084	0.3415
38	0.0089	0.0163	0.5492	0.2915
39	0.0415	0.0153	2.7187	0.0033
40	-0.0908	0.0148	-6.1361	0.0000
41	0.0274	0.0148	1.8496	0.0323
42	-0.0249	0.0158	-1.5737	0.0580
43	-0.0067	0.0156	-0.4297	0.3338
44	-0.0102	0.0142	-0.7217	0.2353

45	0.0048	0.0144	0.3341	0.3692
46	-0.0230	0.0141	-1.6317	0.0515
47	0.0937	0.0131	7.1727	0.0000
48	-0.1842	0.0148	-12.4468	0.0000
49	-0.0403	0.0144	-2.7996	0.0026
50	-0.0147	0.0128	-1.1478	0.1257
51	-0.0531	0.0133	-3.9793	0.0000
52	0.0512	0.0136	3.7553	0.0001
53	-0.0409	0.0132	-3.0909	0.0010
54	0.0186	0.0136	1.3727	0.0851
55	-0.0818	0.0143	-5.7047	0.0000
56	-0.0419	0.0121	-3.4695	0.0003
57	-0.0379	0.0142	-2.6721	0.0038
58	-0.0208	0.0125	-1.6652	0.0481
59	0.0371	0.0137	2.7131	0.0034
60	0.0262	0.0126	2.0753	0.0191

Trend estimates

DEGREE	FACTOR	STD ERR	T-Value	P-Value
intercept	-0.0003	0.0014	-0.1937	0.4232
slope	0.0000	0.0000	-0.1123	0.4553

## COEFS.OUT

MoveReg Version 2.02  
Execution at 12:50, 24-MAY-2011  
series: ic  
series begins: 2008 week: 01  
series ends: 2010 week: 03  
output file: coefs.out

1	2008	0.5376
1	2009	0.5491
2	2008	1.8949
2	2009	1.8694
3	2008	-0.2118
3	2009	-0.2121
4	2008	1.1838
4	2009	1.1761
5	2008	-0.3422
5	2009	-0.3370
6	2008	-0.0147
6	2009	-0.0185
7	2008	0.1203
7	2009	0.1192
8	2008	0.4348
8	2009	0.4339
9	2008	-0.0378
9	2009	-0.0346
10	2008	-0.2095
10	2009	-0.2068
11	2008	0.1554
11	2009	0.1515
12	2008	0.0364
12	2009	0.0438
13	2008	0.0093
13	2009	0.0070
14	2008	0.0406
14	2009	0.0408
15	2008	0.2804
15	2009	0.2847
16	2008	0.0861
16	2009	0.0878
17	2008	-0.0713
17	2009	-0.0702
18	2008	0.1040
18	2009	0.1037
19	2008	-0.0180
19	2009	-0.0171
20	2008	0.0726
20	2009	0.0728
21	2008	-0.1830
21	2009	-0.1797
22	2008	0.1147
22	2009	0.1171
23	2008	0.2319
23	2009	0.2336
24	2008	0.0649
24	2009	0.0638
25	2008	-0.1027
25	2009	-0.1002
26	2008	0.1186
26	2009	0.1191
27	2008	-0.0252
27	2009	-0.0255
28	2008	0.0551
28	2009	0.0543
29	2008	-0.1991
29	2009	-0.1977
30	2008	0.0773
30	2009	0.0750
31	2008	-0.1961

31	2009	-0.1991
32	2008	-0.0858
32	2009	-0.0851
33	2008	-0.2265
33	2009	-0.2261
34	2008	-0.0329
34	2009	-0.0334
35	2008	-0.2487
35	2009	-0.2473
36	2008	-0.0691
36	2009	-0.0713
37	2008	-0.0936
37	2009	-0.0969
38	2008	-0.0644
38	2009	-0.0638
39	2008	-0.0624
39	2009	-0.0622
40	2008	-0.1294
40	2009	-0.1278
41	2008	0.0018
41	2009	-0.0017
42	2008	0.0234
42	2009	0.0224
43	2008	-0.0696
43	2009	-0.0738
44	2008	-0.0191
44	2009	-0.0145
45	2008	-0.0616
45	2009	-0.0700
46	2008	-0.0081
46	2009	-0.0086
47	2008	-0.0033
47	2009	0.0067
48	2008	-0.1209
48	2009	-0.1259
49	2008	-0.0541
49	2009	-0.0542
50	2008	0.0381
50	2009	0.0287
51	2008	-0.0262
51	2009	-0.0235
52	2008	0.0296
52	2009	0.0282
53	2008	-0.0598
53	2009	-0.0524
54	2008	-0.0217
54	2009	-0.0273
55	2008	-0.0083
55	2009	-0.0135
56	2008	0.0030
56	2009	-0.0033
57	2008	0.1142
57	2009	0.1238
58	2008	0.0026
58	2009	0.0095
59	2008	0.0787
59	2009	0.0803
60	2008	0.0526
60	2009	0.0573



## GLOBAL.OUT

MoveReg Version 2.02  
 Execution at 12:50, 24-MAY-2011  
 series: ic  
 series begins: 2008 week: 01  
 series ends: 2010 week: 03  
 output file: global.out

OBSERVATION	ESTIMATE	RESIDUAL	STD ERR	T-Value	P-Value
EFFECT	FACTOR	STD ERR	T-Value	P-Value	
1	415396.9690	415397.3750	0.0001	0.0328	0.0038
2	369498.0310	369452.8120	-0.0342	0.0284	-1.2022
[Holiday	0.9259	0.1421	-0.5420	0.2959]	0.4985
3	380234.0000	393406.3440	-0.0245	0.0305	-0.8058
4	377595.0000	400381.0940	-0.0073	0.0289	-0.2540
5	325886.0000	348099.4690	-0.0079	0.0301	-0.2635
6	330013.0000	355312.8440	-0.0116	0.0276	-0.4181
[Holiday	0.9441	0.0938	-0.6134	0.2721]	0.1193
7	345287.0310	376079.9060	-0.0042	0.0293	-0.1433
8	341364.0310	373369.0620	0.0170	0.0273	0.6213
9	335909.0310	361223.0310	0.0082	0.0283	0.2887
10	316208.0310	337270.6880	-0.0203	0.0275	-0.7401
[Holiday	0.9333	0.0359	-1.9252	0.0319]	0.2325
11	342188.9380	372484.8120	-0.0051	0.0316	-0.1615
12	357209.0000	390821.3120	0.0014	0.0266	0.0509
13	370960.0000	405315.9060	-0.0241	0.0287	-0.8417
14	328334.0000	367507.1250	0.0247	0.0268	0.9221
15	337854.0310	368935.5000	0.0164	0.0269	0.6108
16	335533.0000	360427.2190	-0.0475	0.0268	-1.7739
17	325478.9690	366625.3120	0.0130	0.0265	0.4921
18	319817.0310	355583.1880	0.0048	0.0289	0.1648
19	326626.9690	361428.5000	-0.0210	0.0292	-0.7171
20	300988.9690	340111.7190	0.0297	0.0276	1.0762
[Holiday	0.9449	0.0998	-0.5680	0.2871]	0.1452
21	373033.0000	409176.9380	-0.0133	0.0294	-0.4510
22	349254.0000	388205.9060	-0.0091	0.0268	-0.3385
23	358158.0000	401725.5000	0.0153	0.0290	0.5281
24	368544.0000	407093.8130	0.0033	0.0294	0.1115
25	401672.0630	442236.3750	0.0263	0.0273	0.9629
[Holiday	0.9538	0.1064	-0.4450	0.3298]	0.3276
26	476070.9380	510556.0940	-0.0075	0.0290	-0.2585
27	403606.9380	436101.4060	0.0157	0.0268	0.5842
28	374182.0620	398025.1560	0.0367	0.0265	1.3859
29	381887.0310	391568.0940	-0.0316	0.0265	-1.1929
30	372806.9690	394544.0310	-0.0269	0.0267	-1.0088
31	342164.0000	371998.3750	0.0005	0.0271	0.0199
32	344241.0000	374054.0310	0.0071	0.0281	0.2531
33	360485.0310	388928.0620	0.0066	0.0266	0.2499
34	336131.0310	360252.3440	0.0202	0.0314	0.6444
[Holiday	0.9041	0.0320	-3.1471	0.0019]	0.3989
35	381720.0000	400921.0940	0.0249	0.0274	0.9114
36	397610.0310	407321.4060	-0.0130	0.0274	-0.4741
37	392121.0000	406945.4690	0.0028	0.0270	0.1051
38	426786.0000	441664.5310	-0.0067	0.0290	-0.2293
39	454099.9690	473069.1880	-0.0203	0.0289	-0.7025
40	416114.0310	442399.2190	0.0168	0.0285	0.5887
[Holiday	0.9473	0.1439	-0.3760	0.3548]	0.2802
41	449428.9690	469871.4380	0.0023	0.0297	0.0765
42	466372.9380	486481.1250	0.0192	0.0291	0.6611
43	539812.0000	552364.4380	0.0337	0.0299	1.1258
44	513046.9380	507602.0000	0.0099	0.0293	0.3381

	[Holiday	0.7983	0.1600	-1.4077	0.0848]	
45	609127.9380	596723.6880	0.0061	0.0301	0.2024	0.4205
46	537230.0000	523089.4380	-0.0075	0.0292	-0.2566	0.3996
	[Holiday	0.7351	0.1700	-1.8104	0.0401]	
47	760481.0630	746042.3130	0.0070	0.0298	0.2336	0.4084
48	629866.8750	613620.6250	0.0023	0.0321	0.0717	0.4717
49	719691.0630	699517.4380	-0.0159	0.0314	-0.5045	0.3088
50	717000.1880	708036.5000	-0.0158	0.0314	-0.5044	0.3088
	[Outlier	0.8126	0.1866	-1.1181	0.1362]	
51	731958.0000	734353.1250	-0.0128	0.0327	-0.3926	0.3487
52	956791.0000	972310.6250	0.0195	0.0293	0.6651	0.2555
	[Holiday	1.2778	0.1918	1.2784	0.1055]	
53	763987.0000	761418.2500	-0.0070	0.0326	-0.2141	0.4159
54	620143.0620	622385.6250	0.0273	0.0303	0.9012	0.1873
	[Holiday	0.9259	0.1421	-0.5420	0.2959]	
55	682175.8750	666184.3120	0.0310	0.0294	1.0565	0.1496
56	710152.1250	672317.5000	0.0097	0.0301	0.3211	0.3752
57	619950.8750	581279.6250	0.0071	0.0282	0.2523	0.4013
58	605668.0000	563855.1250	0.0108	0.0297	0.3624	0.3598
	[Holiday	0.9441	0.0938	-0.6134	0.2721]	
59	645826.8750	594808.1250	0.0083	0.0289	0.2891	0.3873
60	652635.0620	596083.2500	-0.0124	0.0268	-0.4650	0.3227
61	601192.0000	555975.8750	-0.0147	0.0288	-0.5103	0.3068
62	590067.0000	553772.1880	0.0156	0.0269	0.5812	0.2827
63	599298.9380	553711.6880	0.0126	0.0314	0.4014	0.3455
64	623278.9380	568647.7500	-0.0060	0.0274	-0.2174	0.4147
65	610521.9380	560336.4380	0.0226	0.0284	0.7946	0.2166
	[Holiday	0.9333	0.0359	-1.9252	0.0319]	
66	596564.1250	535312.1250	-0.0092	0.0272	-0.3361	0.3696
67	583457.0000	528363.5620	-0.0321	0.0268	-1.1973	0.1203
68	536648.0000	501805.7190	0.0426	0.0265	1.6055	0.0594
69	570411.9380	511139.3750	0.0046	0.0268	0.1712	0.4326
70	540924.9380	482498.7810	-0.0185	0.0291	-0.6374	0.2644
71	538310.9380	489152.8750	0.0268	0.0273	0.9803	0.1674
72	500379.9690	442671.5000	-0.0239	0.0294	-0.8115	0.2117
	[Holiday	0.9449	0.0998	-0.5680	0.2871]	
73	581092.0630	526507.3750	0.0001	0.0289	0.0026	0.4989
74	558406.9380	505915.2190	0.0188	0.0267	0.7043	0.2433
75	568552.0630	505496.4690	-0.0168	0.0294	-0.5723	0.2857
76	559857.0620	506221.1880	-0.0016	0.0276	-0.0579	0.4771
77	581144.9380	526309.8750	-0.0246	0.0291	-0.8451	0.2024
	[Holiday	0.9538	0.1064	-0.4450	0.3298]	
78	671241.8120	623043.8750	-0.0006	0.0289	-0.0216	0.4915
79	585575.0000	543866.9380	-0.0032	0.0265	-0.1204	0.4525
80	511628.0630	476703.2190	-0.0431	0.0266	-1.6214	0.0577
81	466695.0000	453976.2190	0.0200	0.0267	0.7483	0.2301
82	482590.0310	460158.5000	0.0341	0.0268	1.2691	0.1071
83	457985.0310	422075.3440	0.0022	0.0271	0.0815	0.4678
84	457268.9690	420486.7810	-0.0062	0.0272	-0.2268	0.4111
85	456682.0620	422541.0310	-0.0071	0.0273	-0.2583	0.3990
86	466277.0000	434475.0940	-0.0155	0.0314	-0.4946	0.3123
87	411125.9380	389081.8440	-0.0291	0.0266	-1.0953	0.1411
	[Holiday	0.9041	0.0320	-3.1471	0.0019]	
88	437543.0310	426316.7500	0.0084	0.0281	0.2980	0.3839
89	445617.9690	430569.1870	0.0023	0.0272	0.0847	0.4665
90	451859.9690	435596.7190	0.0001	0.0291	0.0045	0.4982
91	508659.0310	490286.4690	0.0240	0.0275	0.8748	0.1943
92	460269.0000	433115.5620	-0.0131	0.0298	-0.4395	0.3317
	[Holiday	0.9473	0.1439	-0.3760	0.3548]	
93	494475.9690	471429.4690	-0.0057	0.0291	-0.1978	0.4223

94	482612.0000	462770.0940	-0.0128	0.0297	-0.4308	0.3348
95	531743.0000	516442.0000	-0.0360	0.0289	-1.2453	0.1113
96	475700.9380	478941.4690	-0.0122	0.0302	-0.4047	0.3443
[Holiday	0.7983	0.1600	-1.4077	0.0848]		
97	542492.0000	552911.2500	-0.0072	0.0292	-0.2467	0.4034
98	457669.0310	469833.5620	0.0064	0.0301	0.2119	0.4168
[Holiday	0.7351	0.1700	-1.8104	0.0401]		
99	665685.1250	679031.1250	-0.0038	0.0292	-0.1310	0.4483
100	555382.8750	568685.1880	-0.0059	0.0320	-0.1845	0.4274
101	565243.1250	582208.3750	0.0152	0.0315	0.4826	0.3164
102	556517.0000	564584.5000	0.0152	0.0315	0.4826	0.3164
[Holiday	0.7429	0.2064	-1.4402	0.0801]		
103	645446.0000	644937.7500	0.0157	0.0323	0.4874	0.3147
104	815593.1250	802229.0000	-0.0165	0.0301	-0.5486	0.2937
[Holiday	1.2778	0.1918	1.2784	0.1055]		

# OUTPUT.OUT

nper= 52    loc= 0    nout= 1    hol= 11  
  nfilt= 2    mxttype= 2  
  phi = 0.40    sigma ratio = 16.0  
                  ic

original data

	1	2	3	4	5	6	7	8	9	10	11	12	13	
2001	558800.	599600.	398200.	447400.	424700.	396200.	345800.	357600.	379300.	377200.	351500.	334700.	328600.	
2002	637300.	799200.	558300.	431700.	445600.	438600.	376600.	367500.	385300.	387000.	352000.	348200.	317800.	
2003	620004.	724111.	542563.	434888.	449286.	439520.	398291.	387536.	429782.	414568.	389909.	361492.	371692.	
2004	552815.	677897.	490763.	382262.	406298.	433234.	341634.	328171.	342140.	339007.	312067.	304462.	296776.	
2005	540927.	693776.	467862.	360583.	364704.	347391.	309290.	303814.	290776.	332067.	307061.	290719.	291378.	
2006	555114.	439873.	317926.	318805.	321527.	310078.	269571.	272478.	301867.	294764.	269237.	265370.	253985.	
2007	506059.	506709.	367583.	359959.	339018.	363018.	305945.	299000.	320194.	298927.	277187.	273432.	268218.	
2008	522700.	547943.	415397.	369498.	380234.	377595.	325886.	330013.	345287.	341364.	335909.	316208.	342189.	
2009	731958.	956791.	763987.	620143.	682176.	710152.	619951.	605668.	645827.	652635.	601192.	590067.	599299.	
2010	645446.	815593.	652327.	502710.	533320.	0.	0.	0.	0.	0.	0.	0.	0.	
2011	0.													
	14	15	16	17	18	19	20	21	22	23	24	25	26	
2001	397300.	347000.	369700.	353800.	336300.	331800.	338400.	346200.	335800.	397000.	354500.	351800.	375900.	
2002	382600.	380100.	363200.	349800.	348800.	344600.	335300.	336100.	309200.	378600.	356100.	359000.	358700.	
2003	394160.	434911.	399180.	401342.	377383.	364287.	362276.	359500.	351890.	421190.	383371.	376560.	394214.	
2004	304249.	350739.	334965.	313686.	283236.	292754.	297061.	293974.	304067.	308229.	313930.	322481.	318746.	
2005	294994.	339709.	285657.	299891.	290824.	297347.	275524.	276761.	304306.	289914.	315938.	289831.	286681.	
2006	314696.	268472.	291349.	279715.	317239.	288972.	277168.	292714.	260263.	285892.	277441.	287503.	304638.	
2007	328266.	317917.	303984.	267672.	274801.	258516.	270446.	273397.	263527.	302368.	290951.	292583.	300348.	
2008	357209.	370960.	328334.	337854.	335533.	325479.	319817.	326627.	300989.	373033.	349254.	358158.	368544.	
2009	623279.	610522.	596564.	583457.	536648.	570412.	540925.	538311.	500380.	581092.	558407.	568552.	559857.	
2010	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
	27	28	29	30	31	32	33	34	35	36	37	38	39	
2001	526800.	524100.	406000.	333000.	341700.	333000.	317000.	307900.	319000.	309600.	317200.	353600.	400400.	
2002	456700.	506700.	394600.	338400.	326400.	332700.	313900.	314900.	310900.	318400.	337600.	317300.	319100.	
2003	483401.	552621.	429381.	348382.	333770.	348207.	312087.	313058.	319362.	322501.	328414.	301217.	304968.	
2004	349920.	444531.	394372.	313225.	282128.	291611.	262936.	274433.	276308.	274930.	250568.	275846.	282729.	
2005	327268.	427323.	374665.	295026.	261906.	269746.	257151.	252016.	251642.	271613.	322387.	346204.	292435.	
2006	418363.	377115.	288875.	259974.	275430.	256259.	252357.	251275.	259539.	240231.	267036.	261396.	249288.	
2007	417554.	383839.	298366.	257426.	270563.	266420.	257573.	266179.	257454.	245526.	261971.	247643.	255431.	
2008	401672.	476071.	403607.	374182.	381887.	372807.	342164.	344241.	360485.	336131.	381720.	397610.	392121.	
2009	581145.	671242.	585575.	511628.	466695.	482590.	457985.	457269.	456682.	466277.	411126.	437543.	445618.	
2010	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
	40	41	42	43	44	45	46	47	48	49	50	51	52	53
2001	441800.	426900.	429500.	436900.	444000.	456400.	420300.	438900.	605900.	491800.	440900.	529600.	647000.	
2002	365613.	385689.	349927.	375591.	397346.	427078.	372829.	436549.	385788.	547430.	486258.	483449.	620929.	
2003	337880.	368876.	328572.	352117.	345573.	397387.	347719.	397990.	357811.	486202.	412627.	424192.	516493.	
2004	279591.	338711.	279846.	317573.	305546.	351404.	311901.	355954.	320690.	473570.	370604.	374749.	446699.	
2005	313847.	380093.	303158.	304733.	294376.	340491.	283564.	368859.	290730.	444600.	391961.	359108.	433397.	
475889.														
2006	307646.	271863.	291372.	301079.	326711.	286151.	367690.	323509.	448898.	384123.	361672.	425357.	499979.	
2007	298317.	306519.	307675.	303357.	325831.	351760.	323124.	324047.	462902.	423130.	393042.	456280.	507908.	
2008	426786.	454100.	416114.	449429.	466373.	539812.	513047.	609128.	537230.	760481.	629867.	719691.	717000.	
2009	451860.	508659.	460269.	494476.	482612.	531743.	475701.	542492.	457669.	665685.	555383.	565243.	556517.	
2010	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	

## RESULTS1.OUT

Time-varying betas, 60 coefficients per year

0.5376 0.5491  
 1.8949 1.8694  
 -0.2118 -0.2121  
 1.1838 1.1761  
 -0.3422 -0.3370  
 -0.0147 -0.0185  
 0.1203 0.1192  
 0.4348 0.4339  
 -0.0378 -0.0346  
 -0.2095 -0.2068  
 0.1554 0.1515  
 0.0364 0.0438  
 0.0093 0.0070  
 0.0406 0.0408  
 0.2804 0.2847  
 0.0861 0.0878  
 -0.0713 -0.0702  
 0.1040 0.1037  
 -0.0180 -0.0171  
 0.0726 0.0728  
 -0.1830 -0.1797  
 0.1147 0.1171  
 0.2319 0.2336  
 0.0649 0.0638  
 -0.1027 -0.1002  
 0.1186 0.1191  
 -0.0252 -0.0255  
 0.0551 0.0543  
 -0.1991 -0.1977  
 0.0773 0.0750  
 -0.1961 -0.1991  
 -0.0858 -0.0851  
 -0.2265 -0.2261  
 -0.0329 -0.0334  
 -0.2487 -0.2473  
 -0.0691 -0.0713  
 -0.0936 -0.0969  
 -0.0644 -0.0638  
 -0.0624 -0.0622  
 -0.1294 -0.1278  
 0.0018 -0.0017  
 0.0234 0.0224  
 -0.0696 -0.0738  
 -0.0191 -0.0145  
 -0.0616 -0.0700  
 -0.0081 -0.0086  
 -0.0033 0.0067  
 -0.1209 -0.1259  
 -0.0541 -0.0542  
 0.0381 0.0287  
 -0.0262 -0.0235  
 0.0296 0.0282  
 -0.0598 -0.0524  
 -0.0217 -0.0273  
 -0.0083 -0.0135  
 0.0030 -0.0033  
 0.1142 0.1238  
 0.0026 0.0095  
 0.0787 0.0803  
 0.0526 0.0573

sa ic

105	52	2008	1	19	2010	1	16	7
(8f10.0)								
319811.	325032.	320236.	317618.	320989.	323407.	325252.	328832.	
339649.	347513.	345827.	349301.	354641.	351610.	364824.	376145.	
363602.	373531.	379578.	377116.	392429.	392508.	393304.	404015.	
409729.	424886.	426448.	437226.	458001.	448194.	441146.	445222.	

452544.	459369.	472456.	488071.	485705.	490884.	491294.	485123.
496581.	500755.	513707.	533604.	542277.	548106.	547363.	553487.
557620.	448020.	545388.	540547.	554306.	553096.	569424.	588384.
595811.	600661.	608940.	614163.	608311.	600013.	609825.	617963.
614096.	628539.	621937.	603631.	627611.	630767.	617904.	633965.
617719.	617004.	626539.	615037.	612253.	595866.	593767.	589331.
563576.	571524.	588780.	586636.	580681.	573483.	561716.	543260.
543786.	542288.	537996.	547635.	536321.	529706.	519153.	497118.
487712.	479584.	479049.	472324.	465832.	467838.	470344.	472739.
460293.							
sa factors ic							
209	52	2008	1	19	2012	1	14
(8f10.4)							7
1.2989	1.1368	1.1874	1.1888	1.0153	1.0204	1.0616	1.0381
0.9890	0.9099	0.9895	1.0226	1.0460	0.9338	0.9261	0.8920
0.8952	0.8562	0.8605	0.7981	0.9506	0.8898	0.9106	0.9122
0.9803	1.1205	0.9464	0.8558	0.8338	0.8318	0.7756	0.7732
0.7966	0.7317	0.8079	0.8147	0.8073	0.8694	0.9243	0.8577
0.9050	0.9313	1.0508	0.9615	1.1233	0.9802	1.3894	1.1380
1.2906	1.6004	1.3421	1.7700	1.3783	1.1212	1.1980	1.2070
1.0405	1.0083	1.0606	1.0626	0.9883	0.9834	0.9827	1.0086
0.9942	0.9491	0.9381	0.8890	0.9089	0.8576	0.8712	0.7893
0.9407	0.9050	0.9074	0.9103	0.9492	1.1265	0.9862	0.8682
0.8281	0.8444	0.7779	0.7795	0.7865	0.8131	0.7319	0.8054
0.8195	0.8332	0.9455	0.8405	0.9220	0.9111	1.0243	0.9569
1.1123	0.9543	1.3896	1.1759	1.2134	1.1895	1.3723	1.7253
1.4172	1.1201	1.2078	1.2057	1.0658	0.9959	1.0631	1.0705
0.9911	0.9882	0.9779	0.9359	1.0666	0.9628	0.9408	0.8907
0.9116	0.8601	0.8735	0.8332	0.8757	0.9162	0.9021	0.9103
0.9738	1.0684	1.0155	0.8775	0.8279	0.8493	0.7816	0.7824
0.7787	0.8150	0.7320	0.8015	0.8273	0.8110	0.9555	0.8302
0.9342	0.8969	1.0062	0.9466	1.1172	0.9309	1.3875	1.2235
1.1559	1.5885	1.4113	1.6905	1.4460	1.1258	1.2170	1.1996
1.0967	1.0399	1.0084	1.0737	0.9976	0.9915	0.9739	0.9992
1.0616	0.9809	0.8778	0.8958	0.9108	0.8657	0.8728	0.8356
0.8589	0.9284	0.8966	0.9116	0.9550	1.0557	1.0453	0.8880
0.8305	0.8500	0.7887	0.7837	0.7730	0.8156	0.7314	0.8002
0.8310	0.7965	0.9550	0.8268	0.9411	0.8871	0.9907	0.9286
1.1314	0.9048	1.3814	1.2716	1.1150	1.5553	1.4541	1.4742
1.6512							
obs ic							
105	52	2008	1	19	2010	1	16
(8f10.0)							7
415397.	369498.	380234.	377595.	325886.	330013.	345287.	341364.
335909.	316208.	342189.	357209.	370960.	328334.	337854.	335533.
325479.	319817.	326627.	300989.	373033.	349254.	358158.	368544.
401672.	476071.	403607.	374182.	381887.	372807.	342164.	344241.
360485.	336131.	381720.	397610.	392121.	426786.	454100.	416114.
449429.	466373.	539812.	513047.	609128.	537230.	760481.	629867.
719691.	717000.	731958.	956791.	763987.	620143.	682176.	710152.
619951.	605668.	645827.	652635.	601192.	590067.	599299.	623279.
610522.	596564.	583457.	536648.	570412.	540925.	538311.	500380.
581092.	558407.	568552.	559857.	581145.	671242.	585575.	511628.
466695.	482590.	457985.	457269.	456682.	466277.	411126.	437543.
445618.	451860.	508659.	460269.	494476.	482612.	531743.	475701.
542492.	457669.	665685.	555383.	565243.	556517.	645446.	815593.
652327.							
outlier effects ic							
105	52	2008	1	19	2010	1	16
(8f10.4)							7
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	0.8126	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000							
holiday effects ic							
209	52	2008	1	19	0	1	14
7							
(8f10.4)							
1.0000	0.9259	1.0000	1.0000	1.0000	0.9441	1.0000	1.0000
1.0000	0.9333	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	0.9449	1.0000	1.0000	1.0000	1.0000
0.9538	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	0.9041	1.0000	1.0000	1.0000	1.0000	1.0000	0.9473
1.0000	1.0000	1.0000	0.7983	1.0000	0.7351	1.0000	1.0000
1.0000	1.0000	1.0000	1.2778	1.0000	0.9259	1.0000	1.0000
1.0000	0.9441	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.9333	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9449
1.0000	1.0000	1.0000	1.0000	0.9538	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9041	1.0000
1.0000	1.0000	1.0000	0.9473	1.0000	1.0000	1.0000	0.7983
1.0000	0.7351	1.0000	1.0000	1.0000	0.7429	1.0000	1.2778
1.0000	0.9259	1.0000	1.0000	1.0000	0.9441	1.0000	1.0000
1.0000	1.0000	1.0000	0.9333	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	0.9449	1.0000	1.0000	1.0000
1.0000	0.9538	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	0.9041	1.0000	1.0000	1.0000	1.0000	0.9473
1.0000	1.0000	1.0000	0.7983	1.0000	0.7351	1.0000	1.0000
1.0000	1.0000	1.0000	1.2778	1.0000	0.9259	1.0000	1.0000
1.0000	1.0000	0.9441	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	0.9333	1.0000	1.0000	1.0000	1.0000	1.0000
0.9449	1.0000	1.0000	1.0000	1.0000	0.9538	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9041	1.0000
1.0000	1.0000	1.0000	0.9473	1.0000	1.0000	1.0000	0.7983
1.0000	0.7351	1.0000	1.0000	1.0000	1.0000	1.0000	1.1304
1.1304							

## RESULTS2.OUT

MoveReg Version 2.02  
 Execution at 12:50, 24-MAY-2011  
 series: ic  
 series begins: 2008 week: 01  
 series ends: 2010 week: 03  
 output file: results.out

wk	year	sa	safactor	obs	outlier	holiday
0	114	319811.	1.2989	415397.	1.0000	1.0000
0	0	325032.	1.1368	369498.	1.0000	0.9259
1	2008	320236.	1.1874	380234.	1.0000	1.0000
2	2008	317618.	1.1888	377595.	1.0000	1.0000
3	2008	320989.	1.0153	325886.	1.0000	1.0000
4	2008	323407.	1.0204	330013.	1.0000	0.9441
5	2008	325252.	1.0616	345287.	1.0000	1.0000
6	2008	328832.	1.0381	341364.	1.0000	1.0000
7	2008	339649.	0.9890	335909.	1.0000	1.0000
8	2008	347513.	0.9099	316208.	1.0000	0.9333
9	2008	345827.	0.9895	342189.	1.0000	1.0000
10	2008	349301.	1.0226	357209.	1.0000	1.0000
11	2008	354641.	1.0460	370960.	1.0000	1.0000
12	2008	351610.	0.9338	328334.	1.0000	1.0000
13	2008	364824.	0.9261	337854.	1.0000	1.0000
14	2008	376145.	0.8920	335533.	1.0000	1.0000
15	2008	363602.	0.8952	325479.	1.0000	1.0000
16	2008	373531.	0.8562	319817.	1.0000	1.0000
17	2008	379578.	0.8605	326627.	1.0000	1.0000
18	2008	377116.	0.7981	300989.	1.0000	0.9449
19	2008	392429.	0.9506	373033.	1.0000	1.0000
20	2008	392508.	0.8898	349254.	1.0000	1.0000
21	2008	393304.	0.9106	358158.	1.0000	1.0000
22	2008	404015.	0.9122	368544.	1.0000	1.0000
23	2008	409729.	0.9803	401672.	1.0000	0.9538
24	2008	424886.	1.1205	476071.	1.0000	1.0000
25	2008	426448.	0.9464	403607.	1.0000	1.0000
26	2008	437226.	0.8558	374182.	1.0000	1.0000
27	2008	458001.	0.8338	381887.	1.0000	1.0000
28	2008	448194.	0.8318	372807.	1.0000	1.0000
29	2008	441146.	0.7756	342164.	1.0000	1.0000
30	2008	445222.	0.7732	344241.	1.0000	1.0000
31	2008	452544.	0.7966	360485.	1.0000	1.0000
32	2008	459369.	0.7317	336131.	1.0000	0.9041
33	2008	472456.	0.8079	381720.	1.0000	1.0000
34	2008	488071.	0.8147	397610.	1.0000	1.0000
35	2008	485705.	0.8073	392121.	1.0000	1.0000
36	2008	490884.	0.8694	426786.	1.0000	1.0000
37	2008	491294.	0.9243	454100.	1.0000	1.0000
38	2008	485123.	0.8577	416114.	1.0000	0.9473
39	2008	496581.	0.9050	449429.	1.0000	1.0000
40	2008	500755.	0.9313	466373.	1.0000	1.0000
41	2008	513707.	1.0508	539812.	1.0000	1.0000
42	2008	533604.	0.9615	513047.	1.0000	0.7983
43	2008	542277.	1.1233	609128.	1.0000	1.0000
44	2008	548106.	0.9802	537230.	1.0000	0.7351
45	2008	547363.	1.3894	760481.	1.0000	1.0000
46	2008	553487.	1.1380	629867.	1.0000	1.0000
47	2008	557620.	1.2906	719691.	1.0000	1.0000
48	2008	448020.	1.6004	717000.	0.8126	1.0000
49	2008	545388.	1.3421	731958.	1.0000	1.0000
50	2008	540547.	1.7700	956791.	1.0000	1.2778
51	2008	554306.	1.3783	763987.	1.0000	1.0000



52	2008	553096.	1.1212	620143.	1.0000	0.9259
1	2009	569424.	1.1980	682176.	1.0000	1.0000
2	2009	588384.	1.2070	710152.	1.0000	1.0000
3	2009	595811.	1.0405	619951.	1.0000	1.0000
4	2009	600661.	1.0083	605668.	1.0000	0.9441
5	2009	608940.	1.0606	645827.	1.0000	1.0000
6	2009	614163.	1.0626	652635.	1.0000	1.0000
7	2009	608311.	0.9883	601192.	1.0000	1.0000
8	2009	600013.	0.9834	590067.	1.0000	1.0000
9	2009	609825.	0.9827	599299.	1.0000	1.0000
10	2009	617963.	1.0086	623279.	1.0000	1.0000
11	2009	614096.	0.9942	610522.	1.0000	0.9333
12	2009	628539.	0.9491	596564.	1.0000	1.0000
13	2009	621937.	0.9381	583457.	1.0000	1.0000
14	2009	603631.	0.8890	536648.	1.0000	1.0000
15	2009	627611.	0.9089	570412.	1.0000	1.0000
16	2009	630767.	0.8576	540925.	1.0000	1.0000
17	2009	617904.	0.8712	538311.	1.0000	1.0000
18	2009	633965.	0.7893	500380.	1.0000	0.9449
19	2009	617719.	0.9407	581092.	1.0000	1.0000
20	2009	617004.	0.9050	558407.	1.0000	1.0000
21	2009	626539.	0.9074	568552.	1.0000	1.0000
22	2009	615037.	0.9103	559857.	1.0000	1.0000
23	2009	612253.	0.9492	581145.	1.0000	0.9538
24	2009	595866.	1.1265	671242.	1.0000	1.0000
25	2009	593767.	0.9862	585575.	1.0000	1.0000
26	2009	589331.	0.8682	511628.	1.0000	1.0000
27	2009	563576.	0.8281	466695.	1.0000	1.0000
28	2009	571524.	0.8444	482590.	1.0000	1.0000
29	2009	588780.	0.7779	457985.	1.0000	1.0000
30	2009	586636.	0.7795	457269.	1.0000	1.0000
31	2009	580681.	0.7865	456682.	1.0000	1.0000
32	2009	573483.	0.8131	466277.	1.0000	1.0000
33	2009	561716.	0.7319	411126.	1.0000	0.9041
34	2009	543260.	0.8054	437543.	1.0000	1.0000
35	2009	543786.	0.8195	445618.	1.0000	1.0000
36	2009	542288.	0.8332	451860.	1.0000	1.0000
37	2009	537996.	0.9455	508659.	1.0000	1.0000
38	2009	547635.	0.8405	460269.	1.0000	0.9473
39	2009	536321.	0.9220	494476.	1.0000	1.0000
40	2009	529706.	0.9111	482612.	1.0000	1.0000
41	2009	519153.	1.0243	531743.	1.0000	1.0000
42	2009	497118.	0.9569	475701.	1.0000	0.7983
43	2009	487712.	1.1123	542492.	1.0000	1.0000
44	2009	479584.	0.9543	457669.	1.0000	0.7351
45	2009	479049.	1.3896	665685.	1.0000	1.0000
46	2009	472324.	1.1759	555383.	1.0000	1.0000
47	2009	465832.	1.2134	565243.	1.0000	1.0000
48	2009	467838.	1.1895	556517.	1.0000	0.7429
49	2009	470344.	1.3723	645446.	1.0000	1.0000
50	2009	472739.	1.7253	815593.	1.0000	1.2778
51	2009	460293.	1.4172	652327.	1.0000	1.0000
52	2009	.	1.1201	.	.	0.9259
1	2010	.	1.2078	.	.	1.0000
2	2010	.	1.2057	.	.	1.0000
3	2010	.	1.0658	.	.	1.0000
4	2010	.	0.9959	.	.	0.9441
5	2010	.	1.0631	.	.	1.0000
6	2010	.	1.0705	.	.	1.0000
7	2010	.	0.9911	.	.	1.0000
8	2010	.	0.9882	.	.	1.0000
9	2010	.	0.9779	.	.	1.0000
10	2010	.	0.9359	.	.	0.9333

11	2010	.	1.0666	.	.	1.0000
12	2010	.	0.9628	.	.	1.0000
13	2010	.	0.9408	.	.	1.0000
14	2010	.	0.8907	.	.	1.0000
15	2010	.	0.9116	.	.	1.0000
16	2010	.	0.8601	.	.	1.0000
17	2010	.	0.8735	.	.	1.0000
18	2010	.	0.8332	.	.	1.0000
19	2010	.	0.8757	.	.	0.9449
20	2010	.	0.9162	.	.	1.0000
21	2010	.	0.9021	.	.	1.0000
22	2010	.	0.9103	.	.	1.0000
23	2010	.	0.9738	.	.	1.0000
24	2010	.	1.0684	.	.	0.9538
25	2010	.	1.0155	.	.	1.0000
26	2010	.	0.8775	.	.	1.0000
27	2010	.	0.8279	.	.	1.0000
28	2010	.	0.8493	.	.	1.0000
29	2010	.	0.7816	.	.	1.0000
30	2010	.	0.7824	.	.	1.0000
31	2010	.	0.7787	.	.	1.0000
32	2010	.	0.8150	.	.	1.0000
33	2010	.	0.7320	.	.	0.9041
34	2010	.	0.8015	.	.	1.0000
35	2010	.	0.8273	.	.	1.0000
36	2010	.	0.8110	.	.	1.0000
37	2010	.	0.9555	.	.	1.0000
38	2010	.	0.8302	.	.	0.9473
39	2010	.	0.9342	.	.	1.0000
40	2010	.	0.8969	.	.	1.0000
41	2010	.	1.0062	.	.	1.0000
42	2010	.	0.9466	.	.	0.7983
43	2010	.	1.1172	.	.	1.0000
44	2010	.	0.9309	.	.	0.7351
45	2010	.	1.3875	.	.	1.0000
46	2010	.	1.2235	.	.	1.0000
47	2010	.	1.1559	.	.	1.0000
48	2010	.	1.5885	.	.	1.0000
49	2010	.	1.4113	.	.	1.0000
50	2010	.	1.6905	.	.	1.2778
51	2010	.	1.4460	.	.	1.0000
52	2010	.	1.1258	.	.	0.9259
1	2011	.	1.2170	.	.	1.0000
2	2011	.	1.1996	.	.	1.0000
3	2011	.	1.0967	.	.	1.0000
4	2011	.	1.0399	.	.	1.0000
5	2011	.	1.0084	.	.	0.9441
6	2011	.	1.0737	.	.	1.0000
7	2011	.	0.9976	.	.	1.0000
8	2011	.	0.9915	.	.	1.0000
9	2011	.	0.9739	.	.	1.0000
10	2011	.	0.9992	.	.	1.0000
11	2011	.	1.0616	.	.	1.0000
12	2011	.	0.9809	.	.	1.0000
13	2011	.	0.8778	.	.	0.9333
14	2011	.	0.8958	.	.	1.0000
15	2011	.	0.9108	.	.	1.0000
16	2011	.	0.8657	.	.	1.0000
17	2011	.	0.8728	.	.	1.0000
18	2011	.	0.8356	.	.	1.0000
19	2011	.	0.8589	.	.	0.9449
20	2011	.	0.9284	.	.	1.0000
21	2011	.	0.8966	.	.	1.0000

22	2011	.	0.9116	.	.	1.0000
23	2011	.	0.9550	.	.	1.0000
24	2011	.	1.0557	.	.	0.9538
25	2011	.	1.0453	.	.	1.0000
26	2011	.	0.8880	.	.	1.0000
27	2011	.	0.8305	.	.	1.0000
28	2011	.	0.8500	.	.	1.0000
29	2011	.	0.7887	.	.	1.0000
30	2011	.	0.7837	.	.	1.0000
31	2011	.	0.7730	.	.	1.0000
32	2011	.	0.8156	.	.	1.0000
33	2011	.	0.7314	.	.	0.9041
34	2011	.	0.8002	.	.	1.0000
35	2011	.	0.8310	.	.	1.0000
36	2011	.	0.7965	.	.	1.0000
37	2011	.	0.9550	.	.	1.0000
38	2011	.	0.8268	.	.	0.9473
39	2011	.	0.9411	.	.	1.0000
40	2011	.	0.8871	.	.	1.0000
41	2011	.	0.9907	.	.	1.0000
42	2011	.	0.9286	.	.	0.7983
43	2011	.	1.1314	.	.	1.0000
44	2011	.	0.9048	.	.	0.7351
45	2011	.	1.3814	.	.	1.0000
46	2011	.	1.2716	.	.	1.0000
47	2011	.	1.1150	.	.	1.0000
48	2011	.	1.5553	.	.	1.0000
49	2011	.	1.4541	.	.	1.0000
50	2011	.	1.4742	.	.	1.1304
51	2011	.	1.6512	.	.	1.1304

## SUMMARY.OUT

```

data period, loc
number of holiday codes wanted
no. of seasonal frequencies*2
nfs = 60
kbyr, kbmo, kbd, lyr, lmo, lday, iwd
kkbyr, kkbmo, kkbday 2001 1 6
llyr, llmo, lllday 2011 1 1

series name is ic

starting date 2000 1 29 week 5 day of week 7

ending date 2011 1 1 week 1

dates for analysis are 1 2001 to 1 2011
nobs = 522 nper = 52

2001 1 6 2011 1 1

label day is day 7 of data week
phi = 0.40 sigma ratio = 16.0

kbsub lsub log exp
0 0 1 1
enter holiday codes

transformed data

1 2 3 4 5 6 7 8 9 10 11 12 13
2009 4.3360 4.1274 4.2227 4.2629 4.1271 4.1037 4.1679 4.1784 4.0963 4.0777 4.0932
2010 4.1674 4.4013

14 15 16 17 18 19 20 21 22 23 24 25 26
2009 4.1324 4.1117 4.0886 4.0664 3.9828 4.0438 3.9907 3.9859 3.9128 4.0623 4.0225 4.0405 4.0251
27 28 29 30 31 32 33 34 35 36 37 38 39
2009 4.0624 4.2065 4.0700 3.9350 3.8431 3.8766 3.8243 3.8227 3.8214 3.8422 3.7163 3.7786 3.7969
40 41 42 43 44 45 46 47 48 49 50 51 52 53
2009 3.8108 3.9292 3.8292 3.9009 3.8766 3.9736 3.8622 3.9936 3.8236 4.1982 4.0171 4.0347 4.0191
a matrix of 522 rows and 72 columns will be made nyrs= 10

holiday codes 0 3 10 8 1 4 7 2 12 11

holiday codes 9

series name is XMAS ON FRI December 9 2000 50 46

```

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