SAMA

SAMA (ARITH, PRINT) *input series* *output series* ;

Function:

SAMA performs seasonal adjustment of time series by the moving average method.

Usage:

SAMA is followed by the name of the series to be seasonally adjusted and then the name to be given to the new series. The two series may be the same, in which case the new one will just replace the old one. SAMA should not be used on series which can be negative.

Options:

PRINT/**NOPRINT** specifies that the ratio of the series to its moving average and the computed seasonal factors be printed.

ARITH/**NOARITH** specifies that the arithmetic mean be used for normalization (as described below), rather than a geometric mean.

Examples:

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SAMA (PRINT,ARITH) GNPQ GNPQA;

SAMA (ARITH) GNPQ GNPQA ;
PRINT @SFAC @MOVA ;
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These two examples have the same effect, since @SFAC is the seasonal factor vector and @MOVA is the moving average ratio series.

Output:

When the print option is not on, SAMA produces no printed output. The seasonally adjusted series is stored along with the intermediate results under the following names:

Name	Type	Length	Variable Description
@SFAC	vector	#periods	Seasonal factors which divide the old series to make new series.
@MOVA	series	#obs	The ratio of the old series to its moving average.

If the print option is on, these quantities are also printed in table form.

SAMA

Method:

The series to be adjusted is X, which is indexed by t and is T observations in length. The periodicity of the series (the number of periods per year) is p, which is customarily 4, in the case of quarterly series, or 12, in the case of monthly series. The ratio of the series to its moving average is formed in the following way:

MOVA(t) = X(t)/(Moving Average of X)

where the moving average of X is defined as

p=4: (1/4)*[X(t-2)/2 + X(t-1) + X(t) + X(t+1) + X(t+2)/2]
p=12: (1/12)*[X(t-6)/2 + X(t-5) + ... + X(t) + ... + X(t+5) + X(t+6)/2]

This equation describes a weighted moving average over p+1 observations centered at each observation in turn. Then the vector MOVA(t) may be rewritten as a matrix where each row corresponds to a year and contains p elements. The total number of non-missing elements in MOVA is T-p (p/2 observations are dropped at the beginning and end).

The p seasonal factors are formed by averaging each column in MOVA:

SFAC(1) = 1/(T-1) * (MOVA(2,1)+MOVA(3,1)+...+MOVA(T,1))
...
SFAC(p) = 1/(T-1) * (MOVA(1,p)+MOVA(2,p)+...+MOVA(T-1,p))

They are normalized to average to 1 either arithmetically or geometrically, depending on what was specified.

The seasonally adjusted series is computed by dividing the old series through by the seasonal factors.