By following the sequence of commands recorded in this log, you will be able to extract a trend-cycle component from the data on U.K. Consumption. There are three alternative pathways to the same end result, which are TRACKS A, B and C. The diversions occur after the data has been read and its logarithms have been taken.

IDEOLOG.PAS: Ideal Filters and their Approximations

1. Page Parameters

→ **1**

SPECIFY THE PAGE PARAMETERS

Do you want PostScript Y/N?

→ **N**

Specify the frame surrounding the graph.
5cm x 3cm <= width x height <= 13.5cm x 9.5cm.

For two diagrams per page use 9cm times 6cm
For three diagrams per page use 9cm times 3.75cm

Specify the width

→ **99**

Specify the height

→ **99**

2. Get the Data

→ **2**

GET THE DATA

1. Read the Data

→**1**

READ A DATA FILE

Name the Data File =

→ **cons.txt**

There are 160 data points
What is the interval between observations?

(q) Quarterly

→ **q**

NAME THE DATA

By default the data will be described as
<<an unidentified data series>>

Do you wish to rename the data Y/N?
→ **N**
GET THE DATA

3. Transform the Data
→ **3**

TRANSFORM THE DATA

2. Take Natural Logarithms
→**2**

7. Return to the Main Menu
→ **7**

{+++}
TRACK B: estimate the trend/cycle component by method B. (This method reduces the data to stationarity via the difference operator. Then the differenced data is translated to the frequency domain, where the low-frequency ordinates are selected and the high-frequency ordinates are rejected. Within the frequency domain, the selected ordinates are re-scaled using the values of the ordinates of the frequency response function of the summation operator. Then, the re-scaled ordinates are translated to the time domain and are used for synthesising the trend/cycle sequence.)

IDEOLOG.PAS: Ideal Filters and their Approximations

9. Frequency-Domain Filters
→ **9**

SPECIFY AND APPLY THE FREQUENCY-DOMAIN FILTER

1. Lowpass Filter
→ **1**

SPECIFY THE FREQUENCY-DOMAIN LOWPASS FILTER

B. A lowpass filter can be realised by subtracting a highpass component from the data. The differencing factor that is contained within the highpass filter can be cancelled with the summation operator to avoid the need for reinflating the filtered sequence.

→ **B**

Specify the cut-off point in degrees
→ **22.5**

EXTRACT LOWPASS TREND COMPONENT

Before estimating the trend, you may require to reduce the data to stationarity a differencing operation

Do you wish to take centralised second differences? Y/N
→ **Y**

<<A trend comprising Fourier components of frequencies less than 22.5 degrees per period interpolated through 60 points of an unidentified data series>>
→ **<RETURN>**

<<The residual sequence from detrending 160 points of an unidentified data sequence via the Fourier Method>>
→ **<RETURN>**

{++}
TRACK C estimate the trend/cycle component by method C. (This method reduces the data to stationarity by taking residual deviations of the data from a polynomial trend interpolated by least-squares regression. A linear trend is appropriate to logarithmic data that is to be subjected to twofold differencing. The residual sequence is subjected to a lowpass filter to extract the cyclical component. To generate the trend-cycle component, the cyclical component is added to the polynomial tend.)

IDEOLOG.PAS: Ideal Filters and their Approximations

5. Polynomial Regression
→ **5**

FIT A POLYNOMIAL TREND

1. Fit by Ordinary Least-Squares Regression
→ **1**

What is the degree of he polynomial?
→ **1**

<<A polynomial of degree 1 interpolated through 160 points of an unidentified data series>>
→ **<RETURN>**

<<The residual sequence from fitting a polynomial of degree 1 to 160 points of an unidentified date series>>

→ **<RETURN>**

FIT A POLYNOMIAL TREND

Do you wish to replace the date series by the residual series Y/N?

→ **Y**

IDEOLOG.PAS: Ideal Filters and their Approximations

9. Frequency-Domain Filters

→ **9**

SPECIFY AND APPLY FREQUENCY-DOMAIN FILTER

1. Lowpass Filter

→ **1**

SPECIFY THE FREQUENCY-DOMAIN LOWPASS FILTER

B. A lowpass filter can be realised by subtracting a highpass component from the data. The differencing factor that is contained within the highpass filter can be cancelled with the summation operator to avoid the need for reinflating the filtered sequence.

→ **B**

Specify the cut-off point in degrees

→ **22.5**

EXTRACT LOWPASS TREND COMPONENT

Before estimating the trend, you may require to reduce the data to stationarity a differencing operation

Do you wish to take centralised second differences? Y/N

→ **N**

<<A trend comprising Fourier components of frequencies less than 22.5 degrees per period interpolated through 160 points of an unidentified data series>>

→ **<RETURN>**

<<The residual sequence from detrending 160 points of an unidentified data sequence via the Fourier Method>>

→ **<RETURN>**

THE TREND CYCLE COMPONENT

The trend-cycle component can be derived by adding the filtered version of the residual sequence, which has been subjected to a lowpass filter, to the polynomial function interpolated through the data.

Do you wish to plot the Trend/Cycle component Y/N?

→ **Y**

<<The trend-cycle component derived by adding to the interpolated polynomial the low-frequency components of the residual sequence>>

→ **<RETURN>**

{++}

TRACK A: estimate the trend-cycle component by method A. (This method reduces the data to stationarity via the difference operator. Then the differenced data is subjected to a lowpass frequency-domain filter. Finally, the filtered sequence is re-inflated via the summation operator, given the appropriate initial conditions.)

IDEOLOG.PAS: Ideal Filters and their Approximations

9. Frequency-Domain Filters

→ **9**

SPECIFY AND APPLY THE FREQUENCY-DOMAIN FILTER;

1. Lowpass Filter

→ **1**

SPECIFY THE FREQUENCY-DOMAIN LOWPASS FILTER

A. The frequency filter may be applied to the differenced data and, thereafter, the filtered sequence can be reinflated via a summation operation.

→ **A**

Specify the cut-off point in degrees

→ **22.5**

EXTRACT LOWPASS TREND COMPONENT

Before estimating the trend, you may require to reduce the data to stationarity by at most two differencing operations.

Specify the number of differencing operations
→**2**

ENSURE INTEGRAL CYCLES

Do you wish ensure that the differenced data comprise an integral number of seasonal cycles Y/N?
→**Y**

<<A low-frequency trend/cycle component extracted from 158 points of an unnamed data sequence by a Fourier Method>>
→ **<RETURN>**

<<The residual sequence from detrending158 points of an unnamed data sequence via the Fourier Method>>>>
→ **<RETURN>**

{+++}