# Why take on David Hendry and the Impulse Indicator Saturation Methodology?  Because we can.

Posted on Dec 29, Posted by  [Administrator](#) Category  [Forecasting](#)

The upcoming  [interview](#)  with David Hendry to be published soon in the International Journal of Forecasting reveals a researcher whose work is top tier.  One of his accomplishments discussed was his methodology of detecting change in parameters (ie Chow test) and outliers called "Impulse Indicator Saturation"(ISAT) which is available in the R
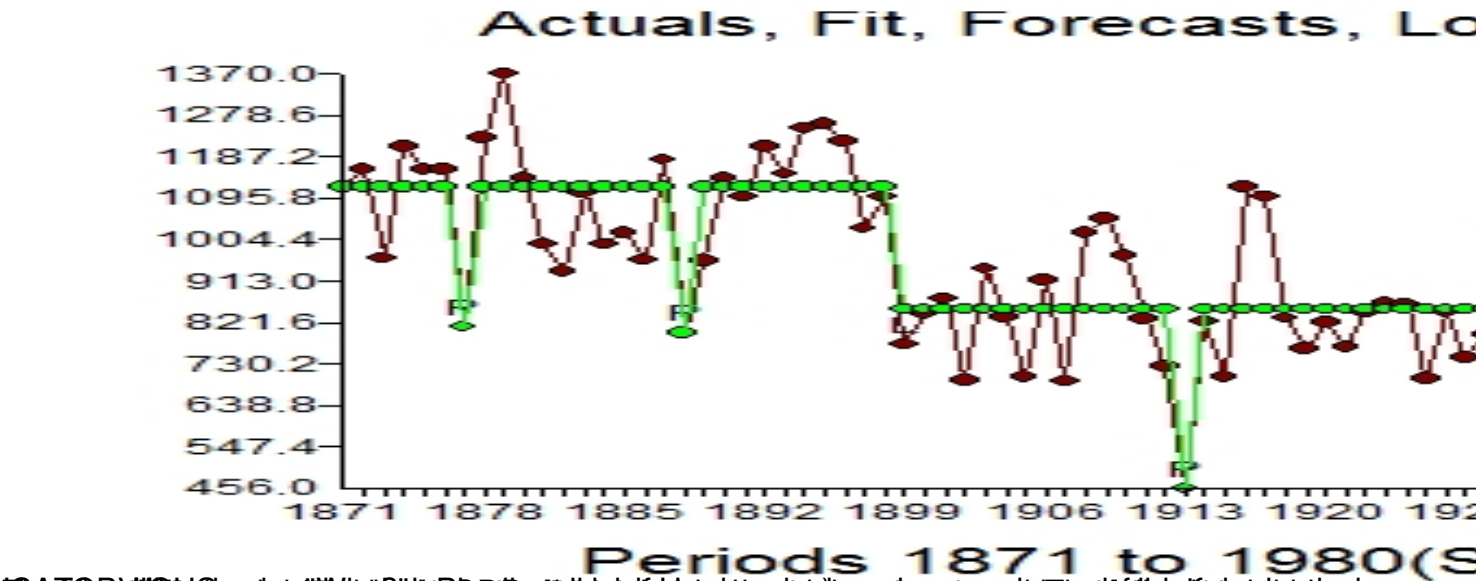 [GETS Package](#)
.  We tested it out and weren't impressed compared to what Autobox does on some examples. Of course, we are always ready to listen, if you have any opinions on this matter.  Speak up, we'll listen!

Detecting change in patterns is not only very important for forecasting, but also for what  [some](#)
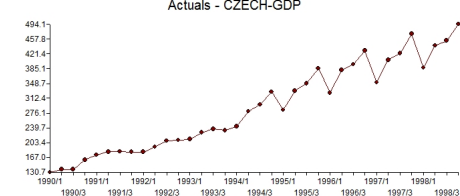 [advertise](#)
as "Business Intelligence" where you want to detect unusual behavior in the data. So, who can detect this?

There are two examples used in the package.  One is the Nile example(Cobb 1978) and the other a random number generator creating a counter example to show that it doesn't create false positives. The Nile example is well handled as it is in Autobox(comes with Autobox in the courseExample2.asc folder).

ISAT finds the level shift and the outlier at obs 43, but misses the others that Autobox finds at 7,18,94.

## Actuals, Fit, Forecasts, Lo



Periods 1871 to 1980(S

Actuals - CZECH-GDP



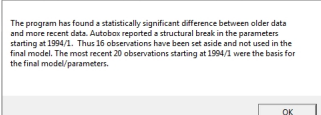Periods 1990/1 to 1998/3(Seasonality )

Here we run the 2SLAT function

```
> jjzoo
1990(1) 1990(2) 1990(3) 1990(4) 1991(1) 1991(2) 1991(3) 1992(1) 1992(2) 1992(3) 1992(4) 1993(1) 1993(2) 1993(3)
  130.7   137.7   137.7   161.2   173.3   181.1   181.5   180.7   193.0   207.8   209.5   211.6   228.4   237.1
1993(4) 1994(1) 1994(2) 1994(3) 1994(4) 1995(1) 1995(2) 1995(3) 1995(4) 1996(1) 1996(2) 1996(3) 1996(4) 1997(1) 1997(2)
  233.5   243.1   260.2   297.1   328.2   283.3   330.7   348.9   385.8   326.0   381.9   395.6   429.1   350.8   406.5
1997(3) 1997(4) 1998(1) 1998(2) 1998(3) 1998(4)
  422.2   470.0   387.3   441.6   453.7   494.1
```

 and detecting the change not detecting the

Autobox identifies a break point an tells the user

The program has found a statistically significant difference between older data and more recent data. Autobox reported a structural break in the parameters starting at 1994/1.  Thus 16 observations have been set aside and not used in the final model. The most recent 20 observations starting at 1994/1 were the basis for the final model/parameters.

OK

Here is the model then an ARIMA with a constant and the detection and deletion of the older

A SIGNIFICANT CHANGE IN PARAMETERS WAS FOUND AT PERIOD :   17

MODELLING OUTPUT SERIES:CZECH-GDP

$$Y(T) = 772.39 \quad + \quad [(1- .906B^{**} 4)]^{**}-1 \ [A(T)]$$

DETAILS.HTM - Notepad
File  Edit  Format  View  Help

DIAGNOSTIC CHECK #4: THE CHOW PARAMETER CONSTANCY TEST
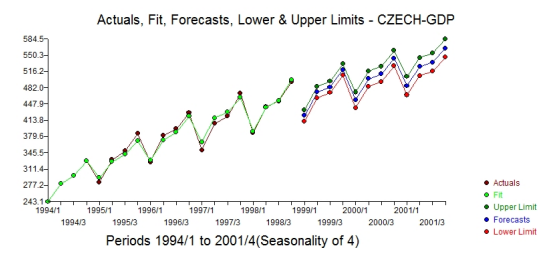    The Critical value used for this test :    .01
    The minimum group or interval size was:    14

    F TEST TO VERIFY CONSTANCY OF PARAMETERS

| CANDIDATE BREAKPOINT | F VALUE | P VALUE |
|---|---|---|
| 15 1993/ 3 | 5.13745 | .0085127168 |
| 16 1993/ 4 | 7.65146 | .0013449035 |
| 17 1994/ 1 | 8.01320 | .0010574117* |
| 18 1994/ 2 | 3.32488 | .0404967284 |
| 19 1994/ 3 | 1.66572 | .2063226110 |
| 20 1994/ 4 | 1.85596 | .1696218770 |
| 21 1995/ 1 | 1.78930 | .1816322596 |
| 22 1995/ 2 | NA | NA |
| 23 1995/ 3 | .645807 | .5946602171 |

* INDICATES THE MOST RECENT SIGNIFICANT  BREAK POINT  1% SIGNIFICANCE LEVEL

Here is the actual, fit and forecast of the truncated series.

Actuals, Fit, Forecasts, Lower & Upper Limits - CZECH-GDP



Periods 1994/1 to 2001/4(Seasonality of 4)

Tags:  Tagged in:

Saturation        David F. Hendry        Doornik        GETS        Impulse Indicator