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

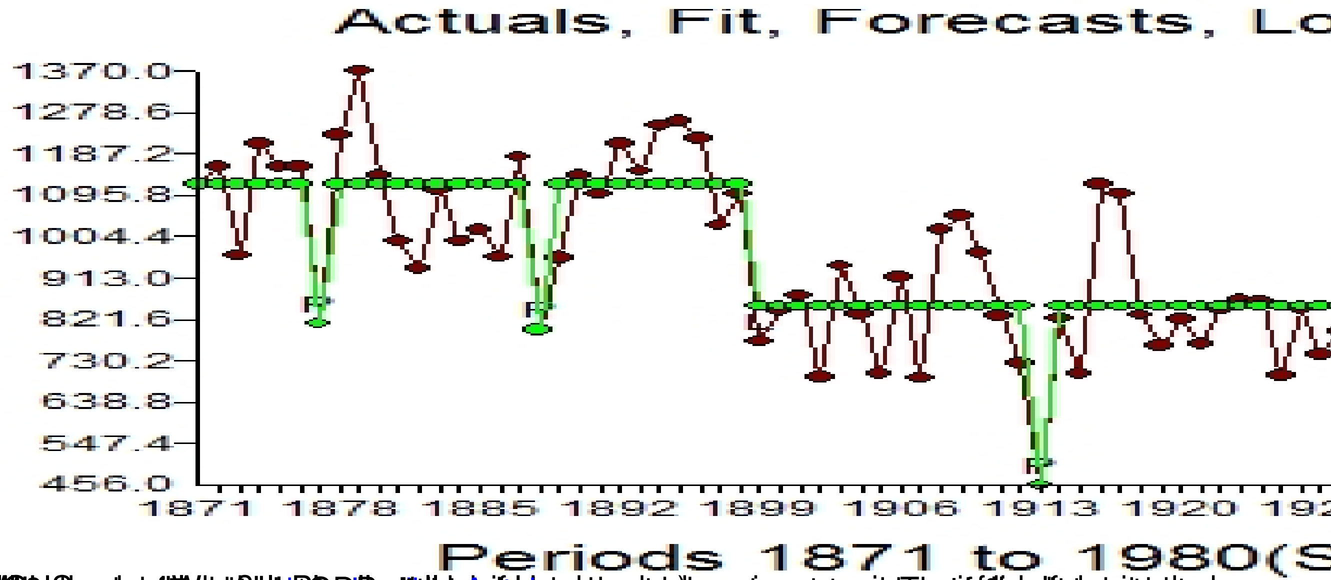
Posted on Dec 29, Posted by Administrator Category Forecasting

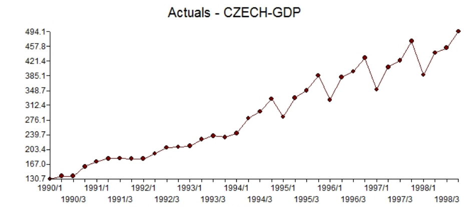
The upcoming interview with David Hendry to be published soon in the International Journal of Forecasting reveals a researcher whose work is top tier. One of his accomplishments discussed was his methodology of detecting change in parameters (ie Chow test) and outliers called "Impulse Indicator Saturation"(ISAT) 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.





Here we run the GETS ISAT function

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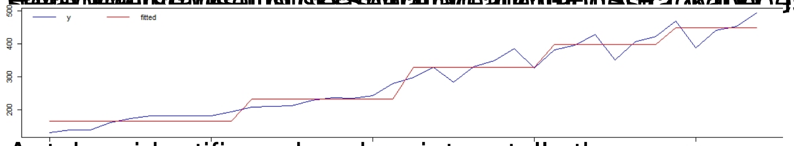
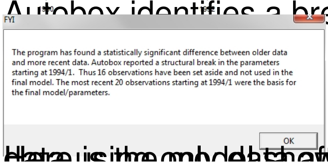
> jjzoo
1990(1) 1990(2) 1990(3) 1990(4) 1991(1) 1991(2) 1991(3) 1991(4) 1992(1) 1992(2) 1992(3) 1992(4) 1993(1) 1993(2) 1993(3)
  130.7   137.7   137.7   161.2   173.3   181.1   181.5   180.7   180.7   193.0   207.8   209.5   211.6   228.4   237.1
1993(4) 1994(1) 1994(2) 1994(3) 1994(4) 1995(1) 1995(2) 1995(3) 1995(4) 1996(1) 1996(2) 1996(3) 1996(4) 1997(1) 1997(2)
  233.5   243.1   280.2   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
```

... detecting the



Autobox identifies a break point an tells the user



Here is the model ... AR4 with a constant and the detection and deletion of the older

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A SIGNIFICANT CHANGE IN PARAMETERS WAS FOUND AT PERIOD :   17

MODELLING OUTPUT SERIES:CZECH-GDP

Y(T) =  772.39      +     [(1-  .906B** 4)]**-1  [A(T)]
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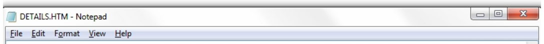


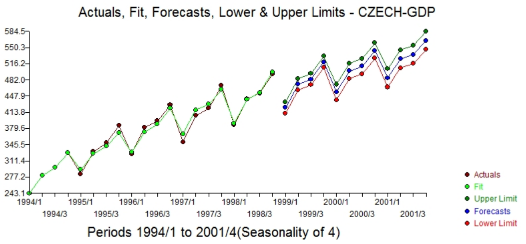
DIAGNOSTIC CHECK #4: THE CHOW PARAMETER CONSTANCY TEST
The Critical value used for this test : .01
The minimum group or interval size was: 14

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.



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