CAMPLET:
Seasonal adjustment without revisions

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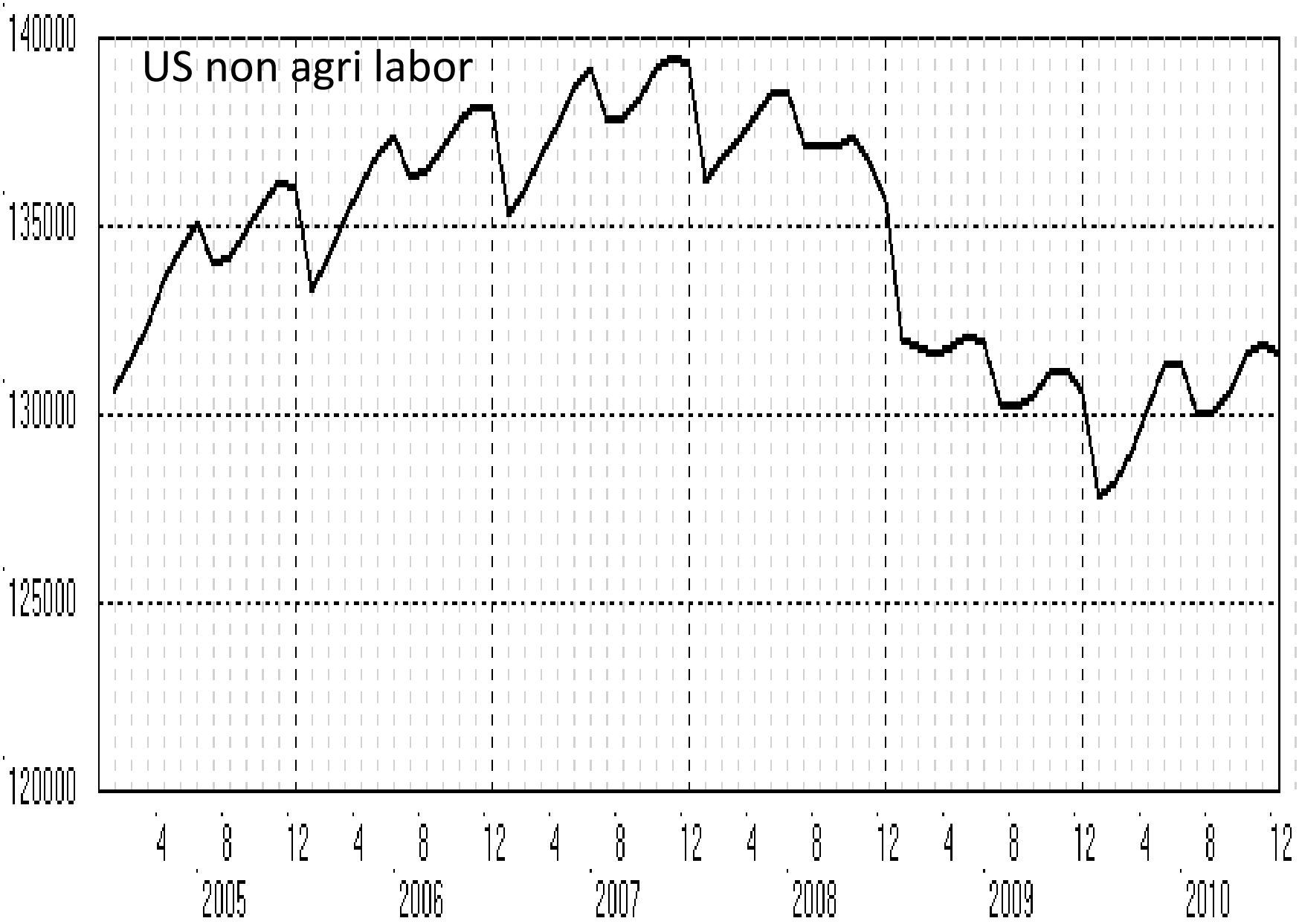
ESMD seasonal workshop, Washington DC, April 26 2018.


US non agri labor
140000
135000
130000
125000
120000
4
8
12
4
8
12
4
8
12
4
8
12
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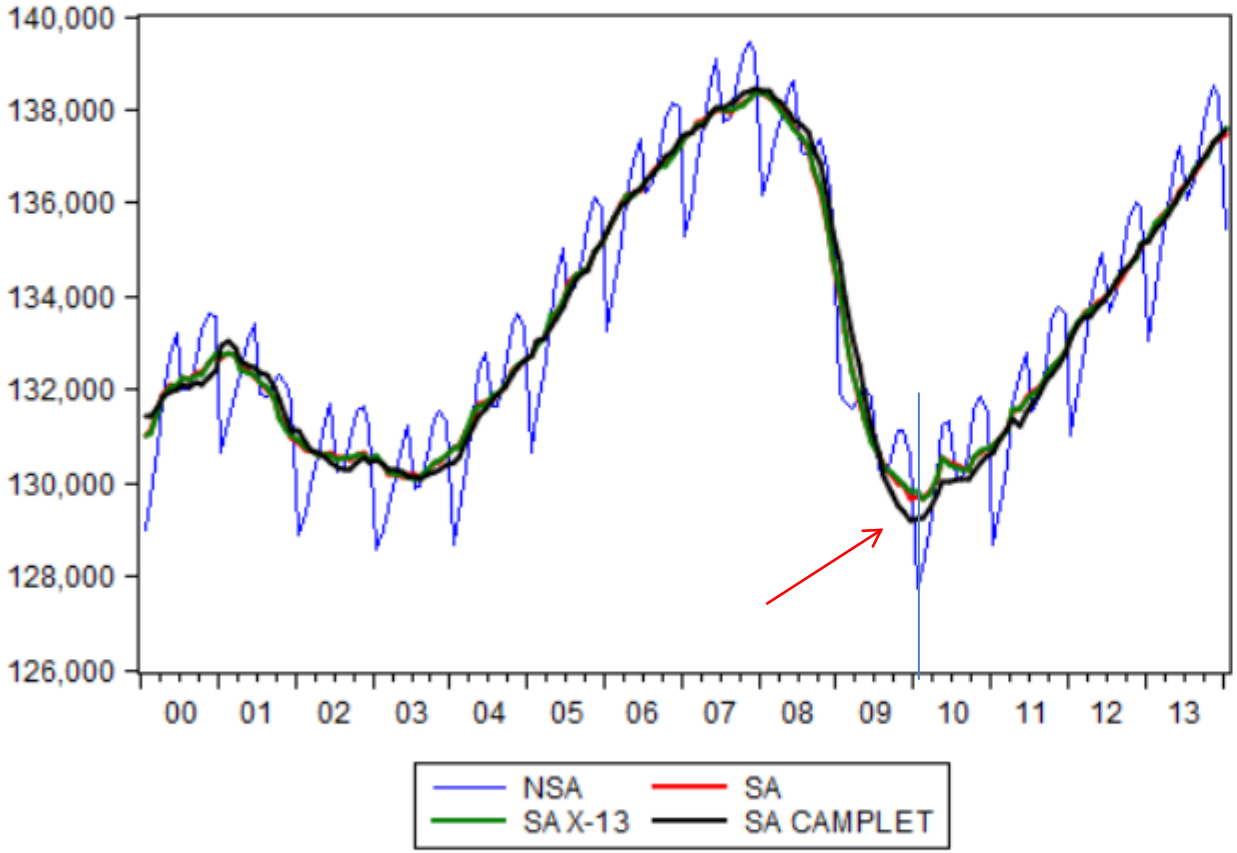
8
12
2005
2006
2007
2008
2009
2010

Latest vintage

US non-farm payroll employment



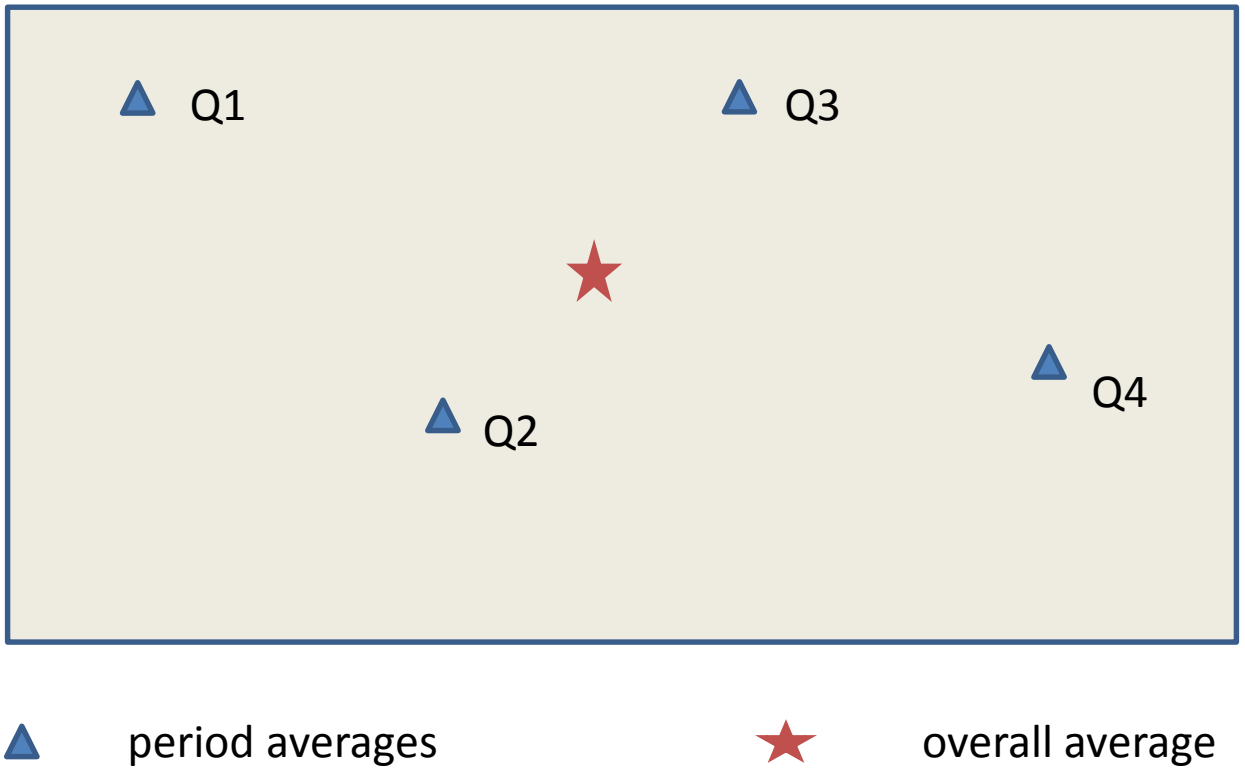
we distinguish two components in a time series: a Seasonal component (S) and a Non Seasonal component (NS):

$$Y_t = NS_t + S_t$$

Seasonal are systematic intra-year fluctuations.
Non Seasonal fluctuations have no systematism.

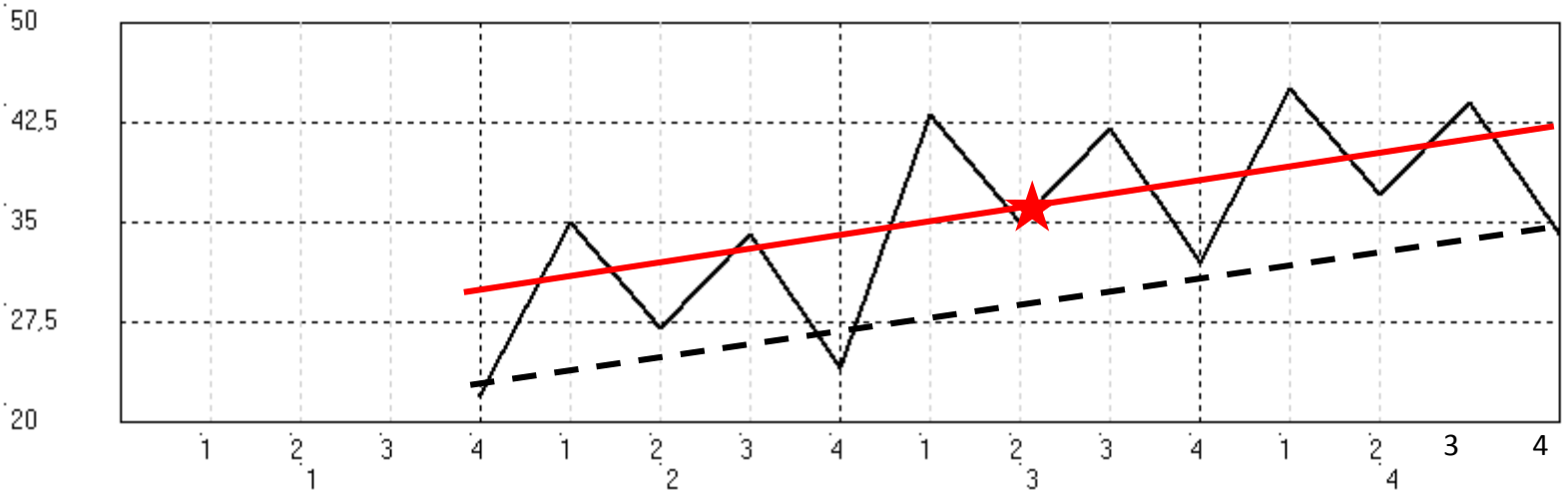
Period averages of a quarterly series.

Systematism apparent if we sum and average groups of corresponding periods.



Average NS change: Connect 2 corresponding quarters

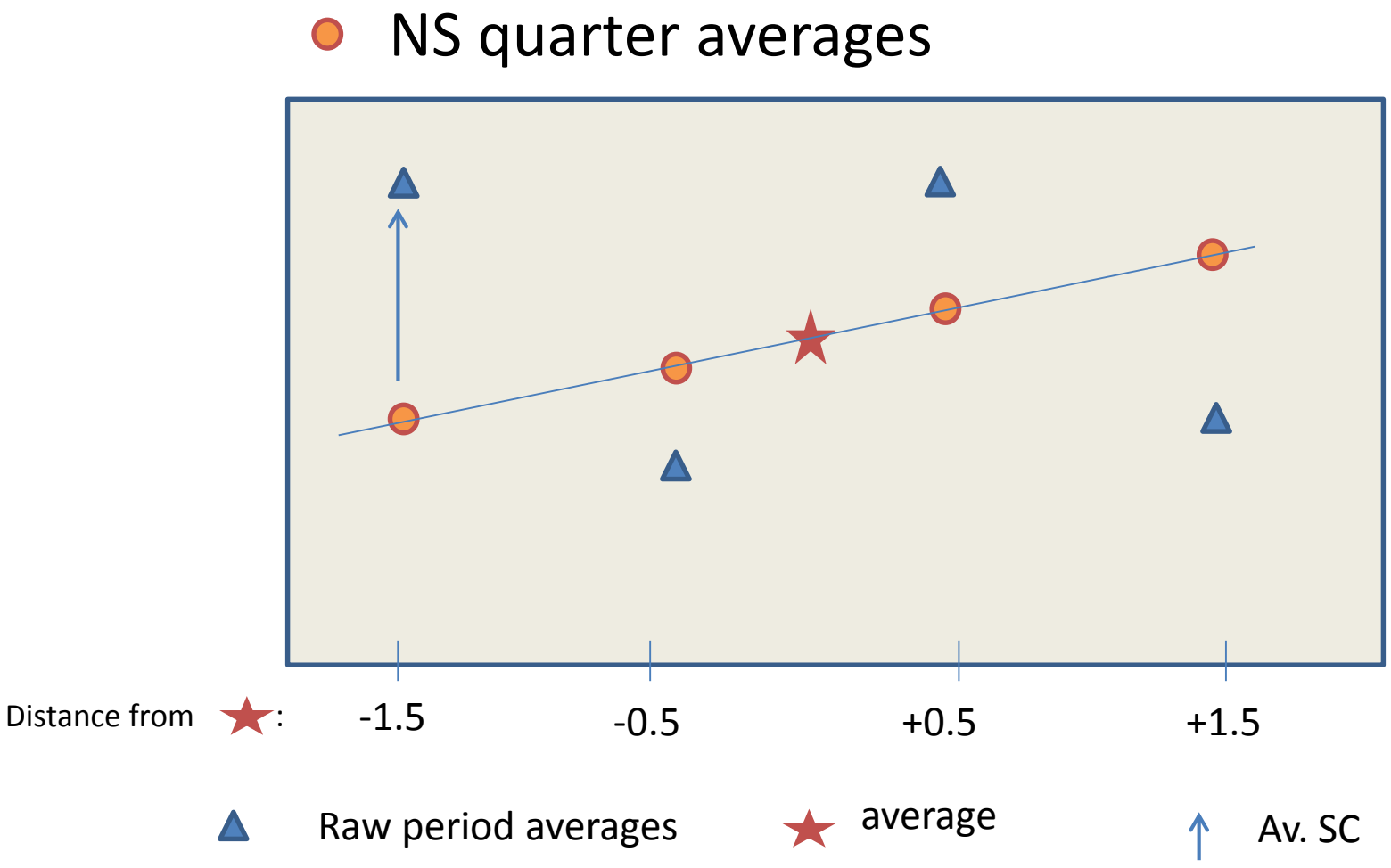
Average NS values: Move NS change line to average.



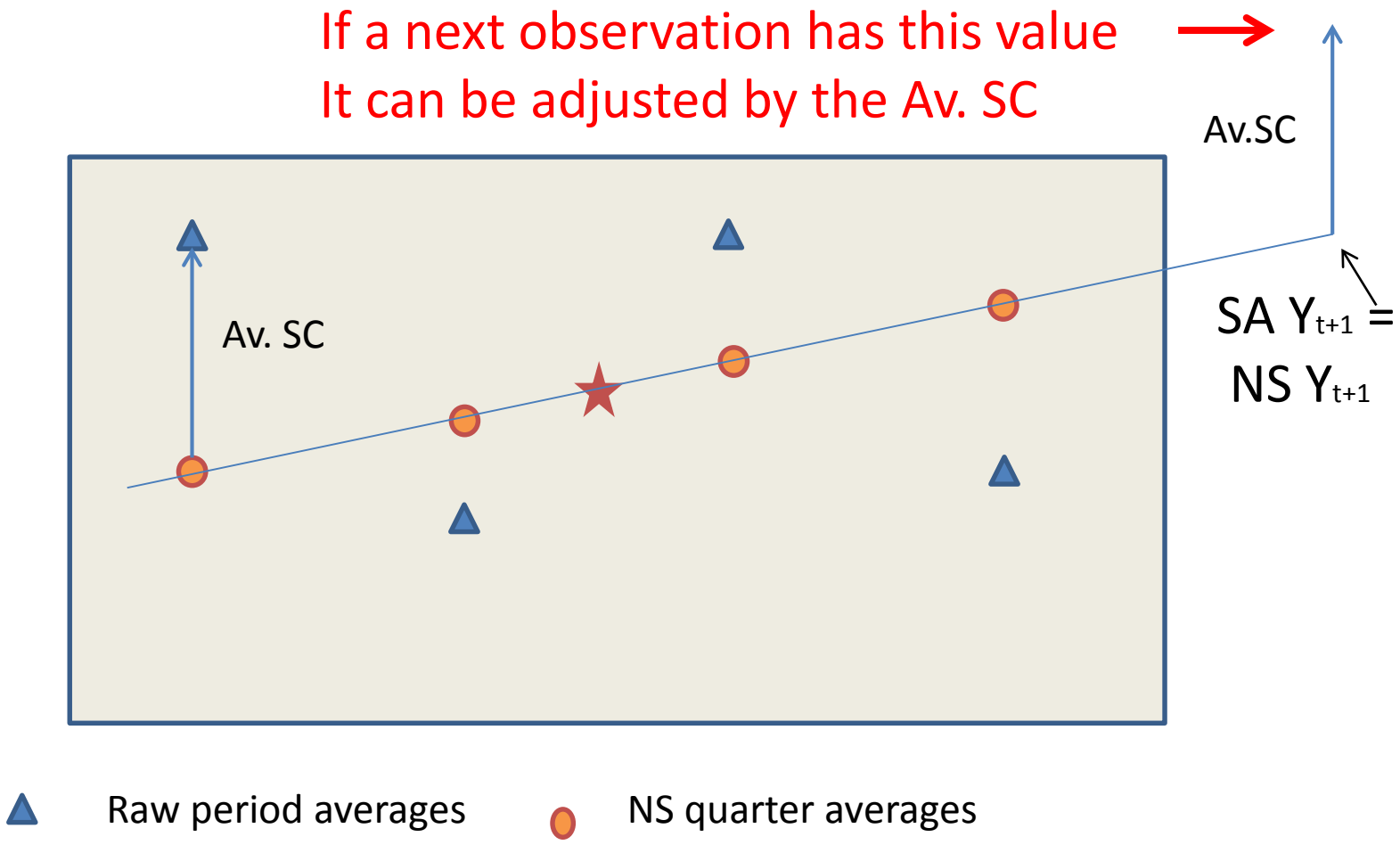
1. Gradient of average NS change

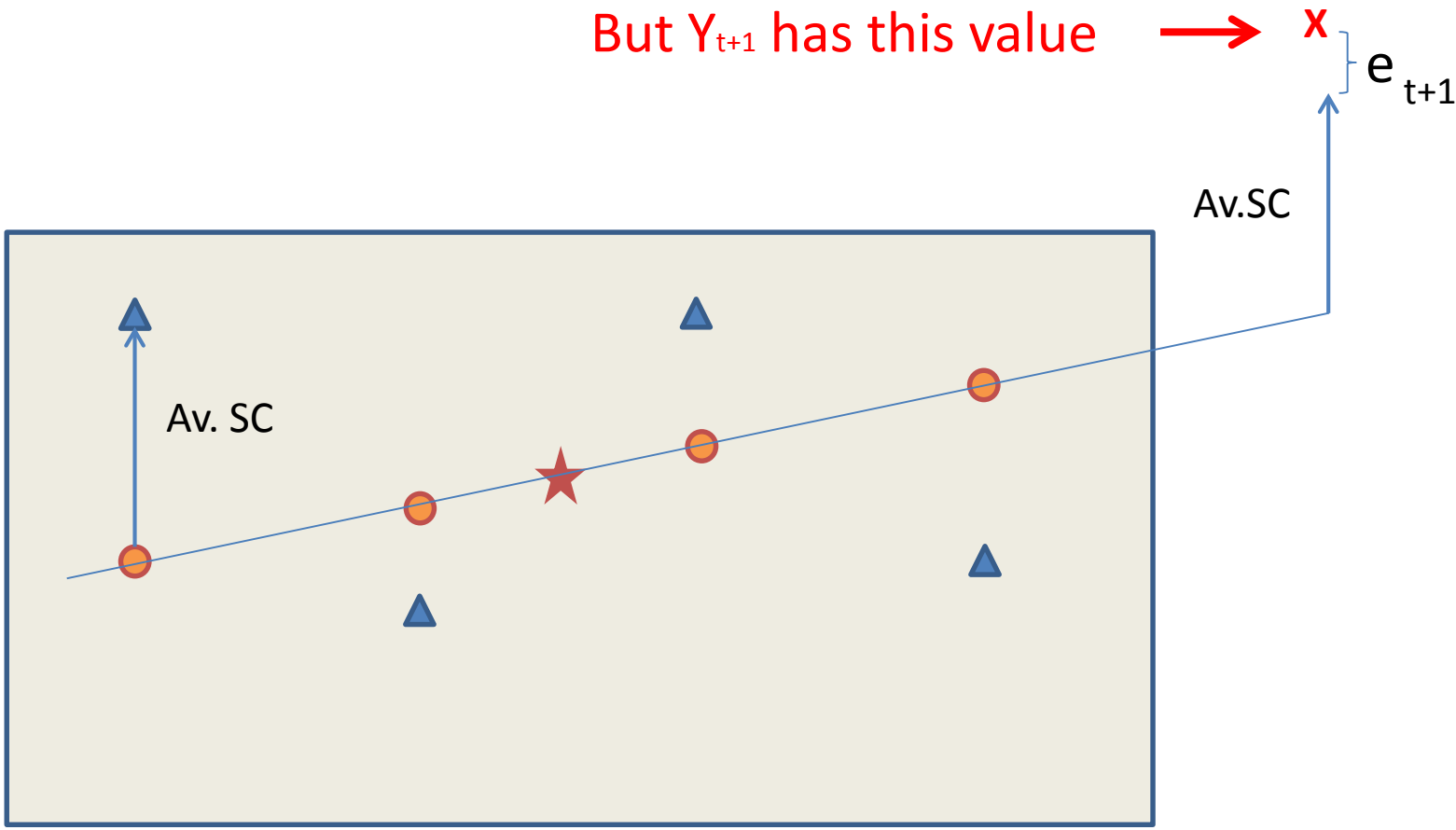
2. Average NS through overall average

NS averages make a linear progression:

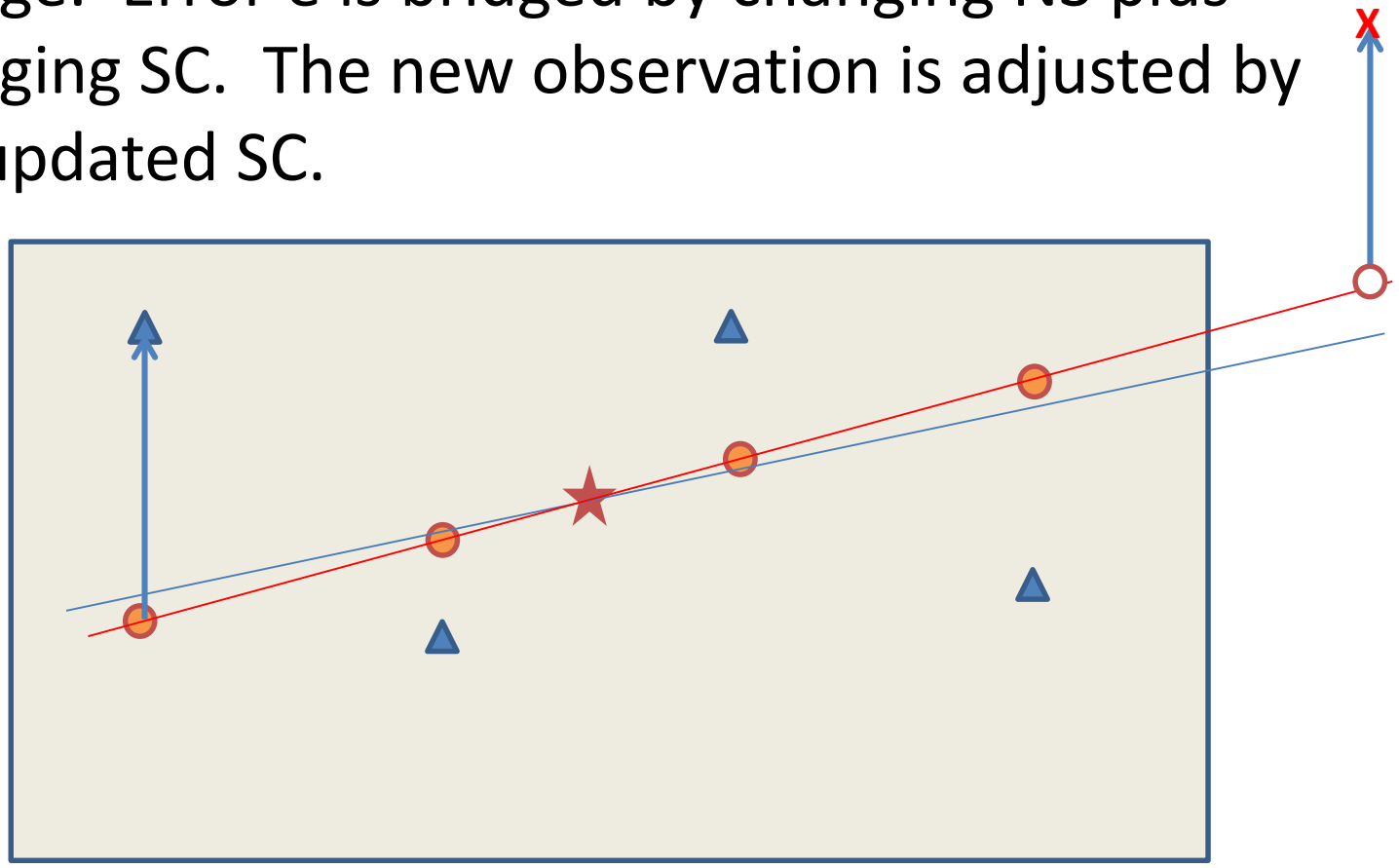


1. Extend the NS to a new observation and apply the average SC:




But Y_{t+1} has this value
X
e_{t+1}
Av.SC
Av. SC
Extrapolation error e_{t+1}

If we increment the NS gradient, all average SC change. Error e is bridged by changing NS plus changing SC. The new observation is adjusted by the updated SC.

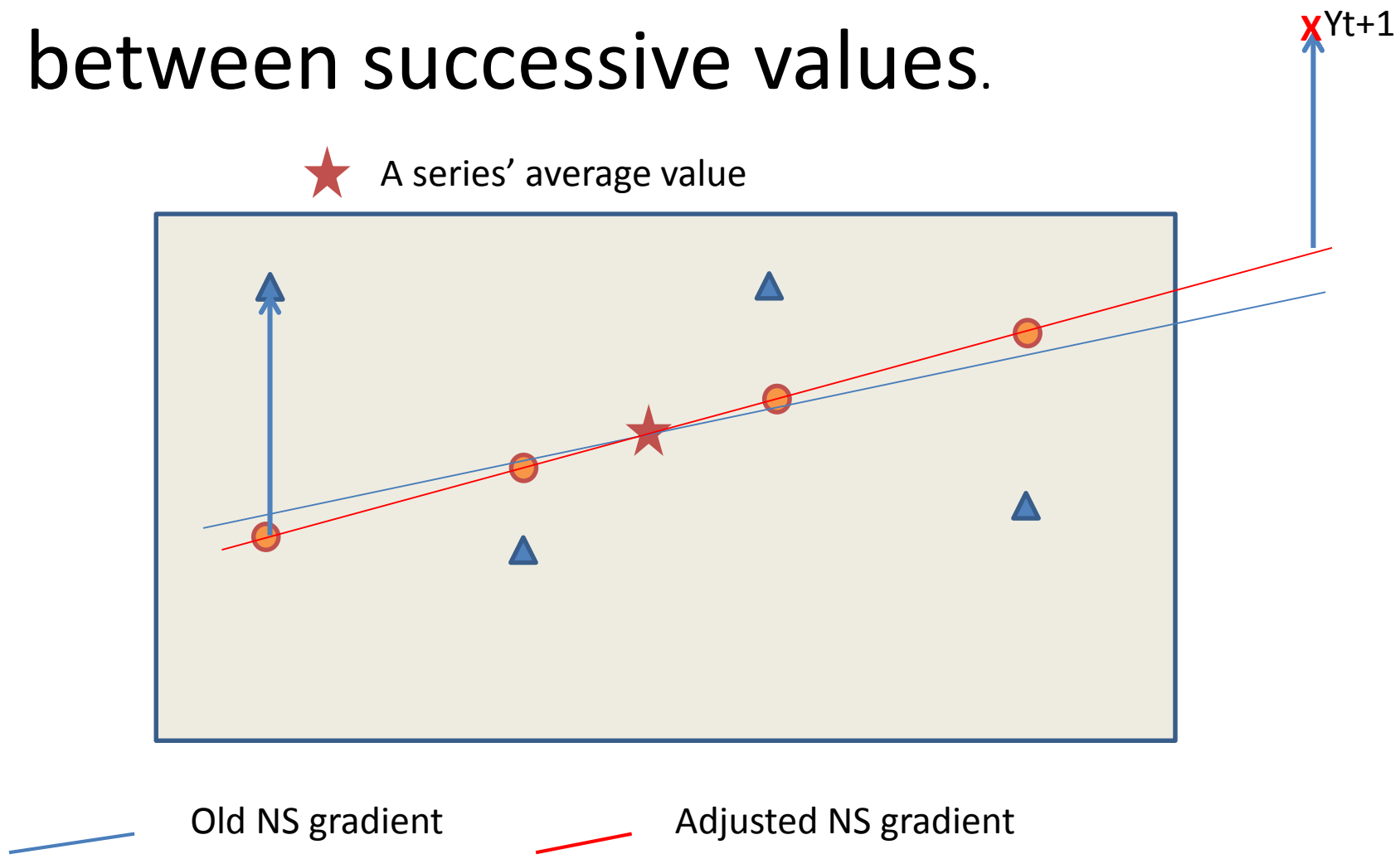


Old NS gradient

Adjusted NS gradient

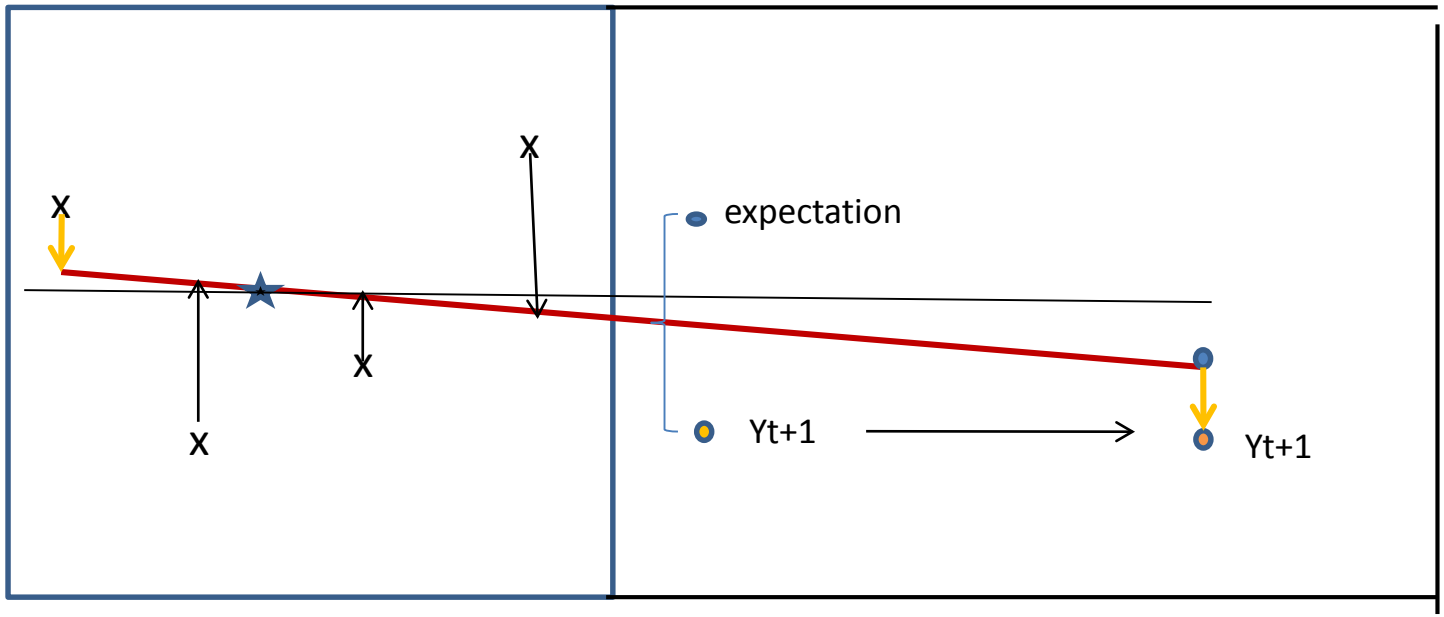
Yt+1 s.a. = NS Yt+1

Camplet deseasonalizes CHANGE between successive values.



Change is attributed to the last observation.

If Yt+1 is aberrant:



With a longer adjustment length the NS gradient changes less:

Less impact on SC.

5 parameters control the adjustment length for each observation.

CA – Common Adjustment, the adjustment period for values that are not aberrant.

M – Multiplier increments the adjustment period for outliers.

P – Pattern shift, reduces the adjustment period to 1 year if the Seasonal Pattern shifts.

LE – Limit to Error is a criterion for an observation being aberrant or not.

T – Times: how many times must an outlier return to indicate a pattern shift.

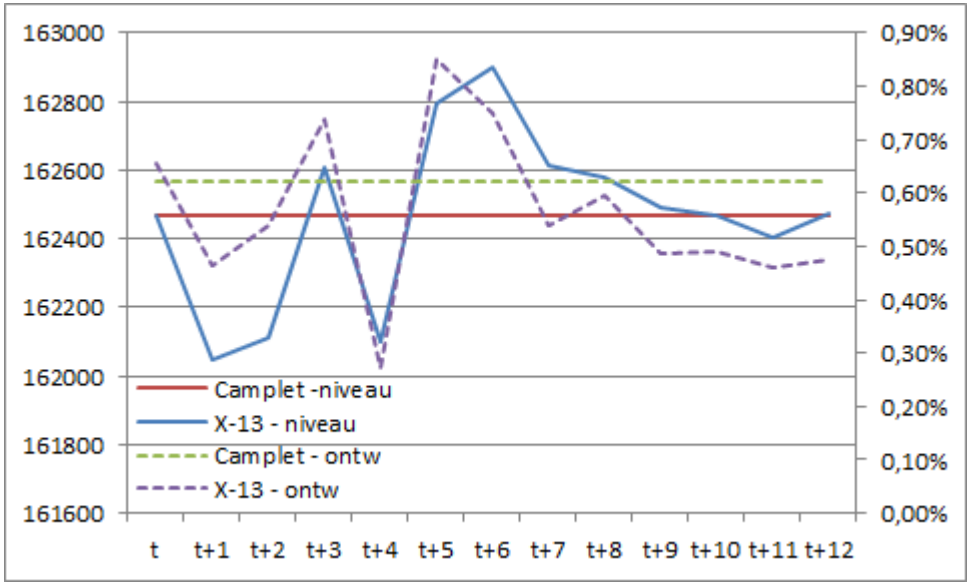
Euro millions

Quasi Real Time analysis

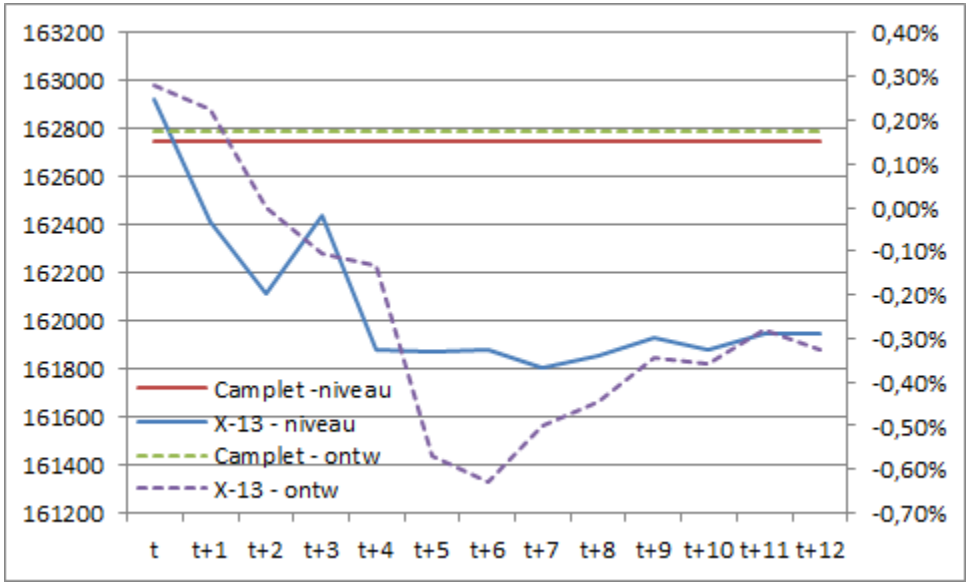
Netherlands' GDP

(quarterly revisions of X13)

Seas.adj values for Q. 2008,2



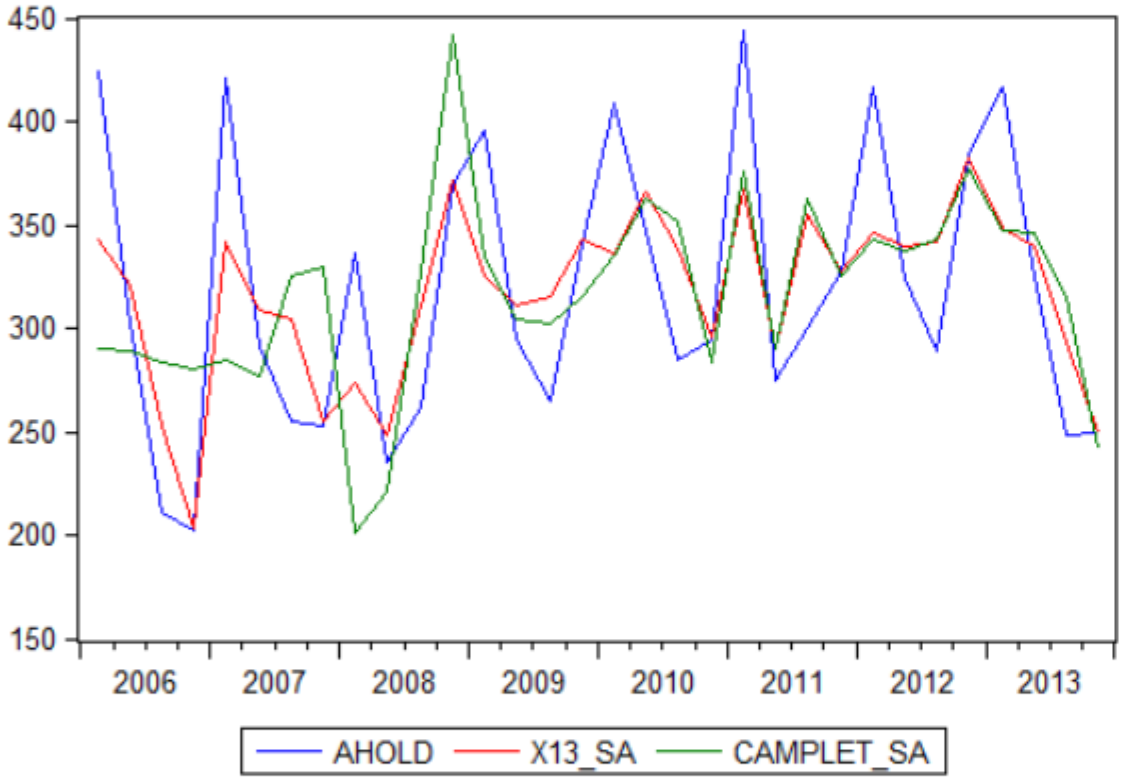
Seas. Adj. Values for Q. 2008,3



Source: Ouwehand (Statistics Netherlands) "Comparison seasonal adjustment methods Camplet and X13-ARIMA-SEATS", June 2015

Ahold Operating income

(an example with shifting seasonal pattern)



Source: Ahold Quarterly Bulletin (various issues)

Ahold: Change in accounting policies

As of 2008, Ahold has applied IFRS 8 "Operating segments". IFRS 8 introduces new disclosure requirements with respect to segment information. This adoption of IFRS 8 did not have an impact on Ahold's segment structure, consolidated financial results or position; however, segment results no longer include intercompany royalties.

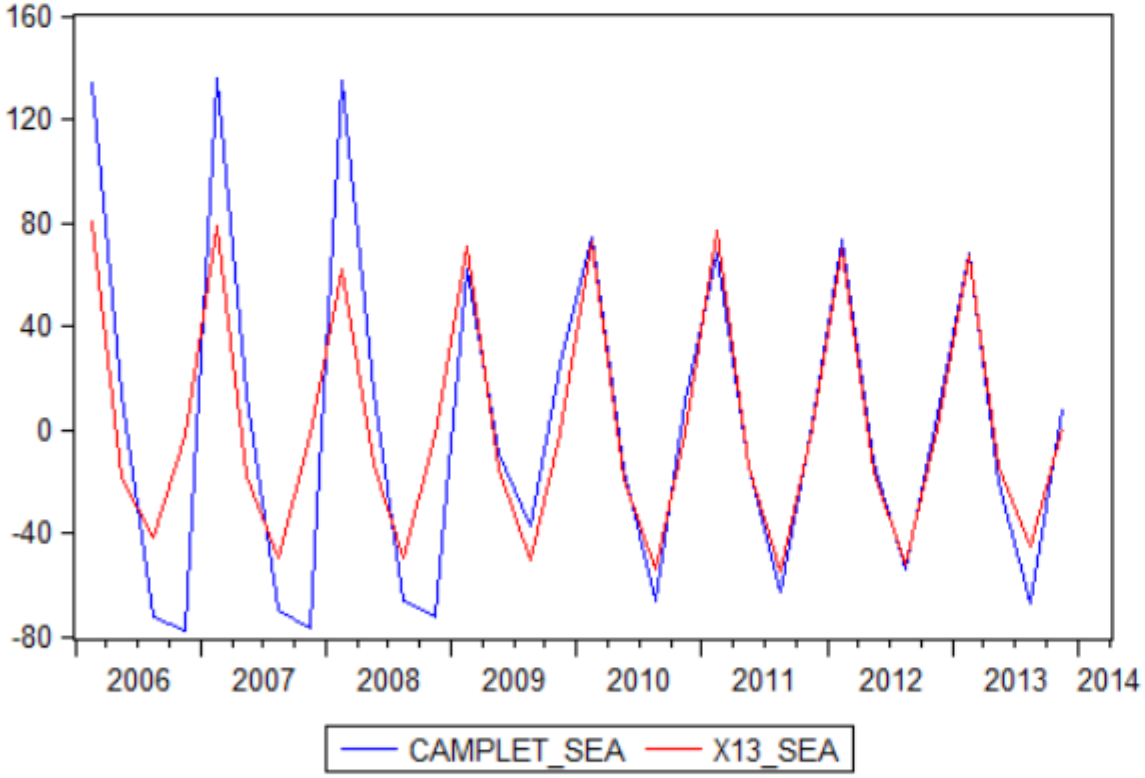
From: Ahold Quarterly Bulletin Q1 2008

Operating income decreased from €421 million in 2007Q1 to €336 million in 2008Q1

Ahold operating income: Seasonal pattern

CAMPLET picks up change in seasonal pattern!

X13 anti-dates it to 2006.



CONCLUSIONS

1. Camplet deseasonalizes observations by comparing period change to average change.

2. No revisions,
   No impact on past decompositions
   No phase shift.

3. No pretreatment :
   variable adjustment length deals with outliers.

4. Camplet is intuitively more attractive.