"Pris" – An application for index estimation

The 24th Voorburg Group Meeting on Service Statistics. Oslo, Norway

Fitwi Wolday, Statistics Norway

September 16, 2009

Overview

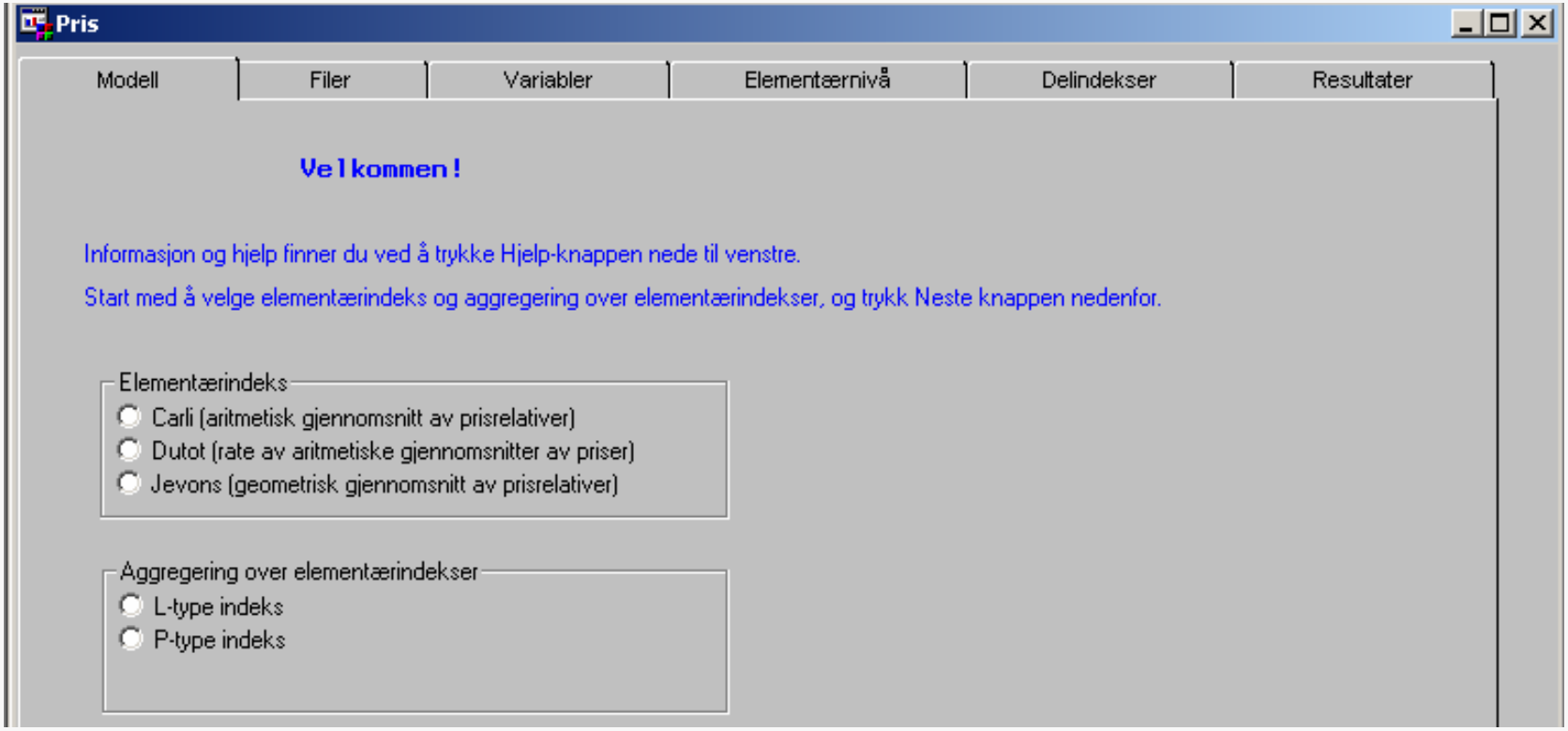
- Background
  - “Pris” an integral part of ISEE
  - Interface/communication with other applications
- Hierarchical estimation of an index in ”Pris”
  - Elementary/micro index estimation
  - Aggregation of elementary indices
  - Integration of weights into the application
  - Chaining in ”Pris”
  - Output / Results
    - Display
    - Controls in “Pris”

Background

- **ISEE**
  - DynaRev (~Dynamic editing)
    - Administration of weights (index calculation)
    - Price data
  - “Pris” A 6-step Index estimation application.
    - Model specification
    - Data source
    - Variable specification
    - Elementary aggregates
    - Sub indices
    - Results
    - ”Pris” with DynaRev as a data source
- **“Pris”**
  - Interface/communication with other applications
  - A-z in one set
    - Interactive, menu-based with tips and help-texts
    - Index estimation and statistical estimates
    - Editing and controls

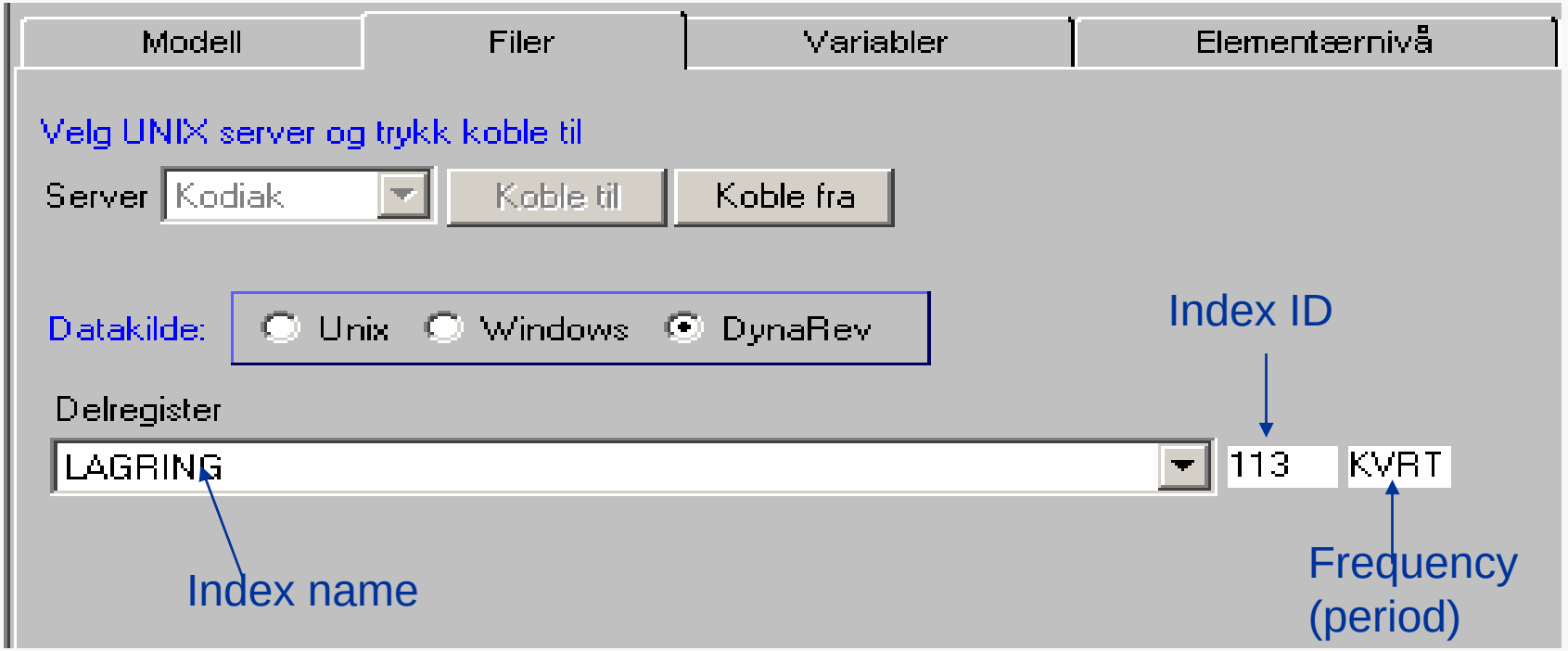
Hierarchical estimation of an index in ”Pris”

- Model choice
  - Elementary/micro index estimation
  - Aggregation of elementary indices
    - L-type Index?
    - P-type index?



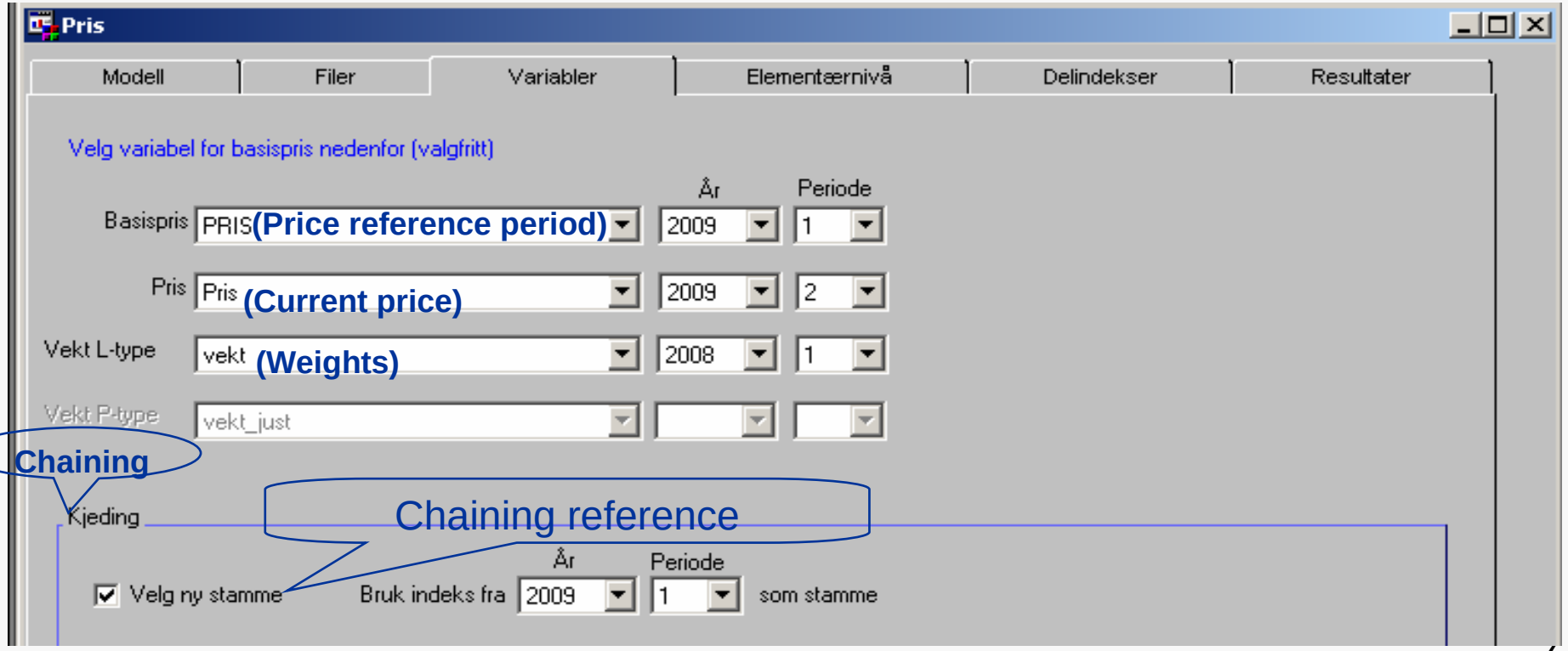
.....continued

- Data source
  - SAS files from Unix/windows
  - Directly from DynaRev (data editing application)



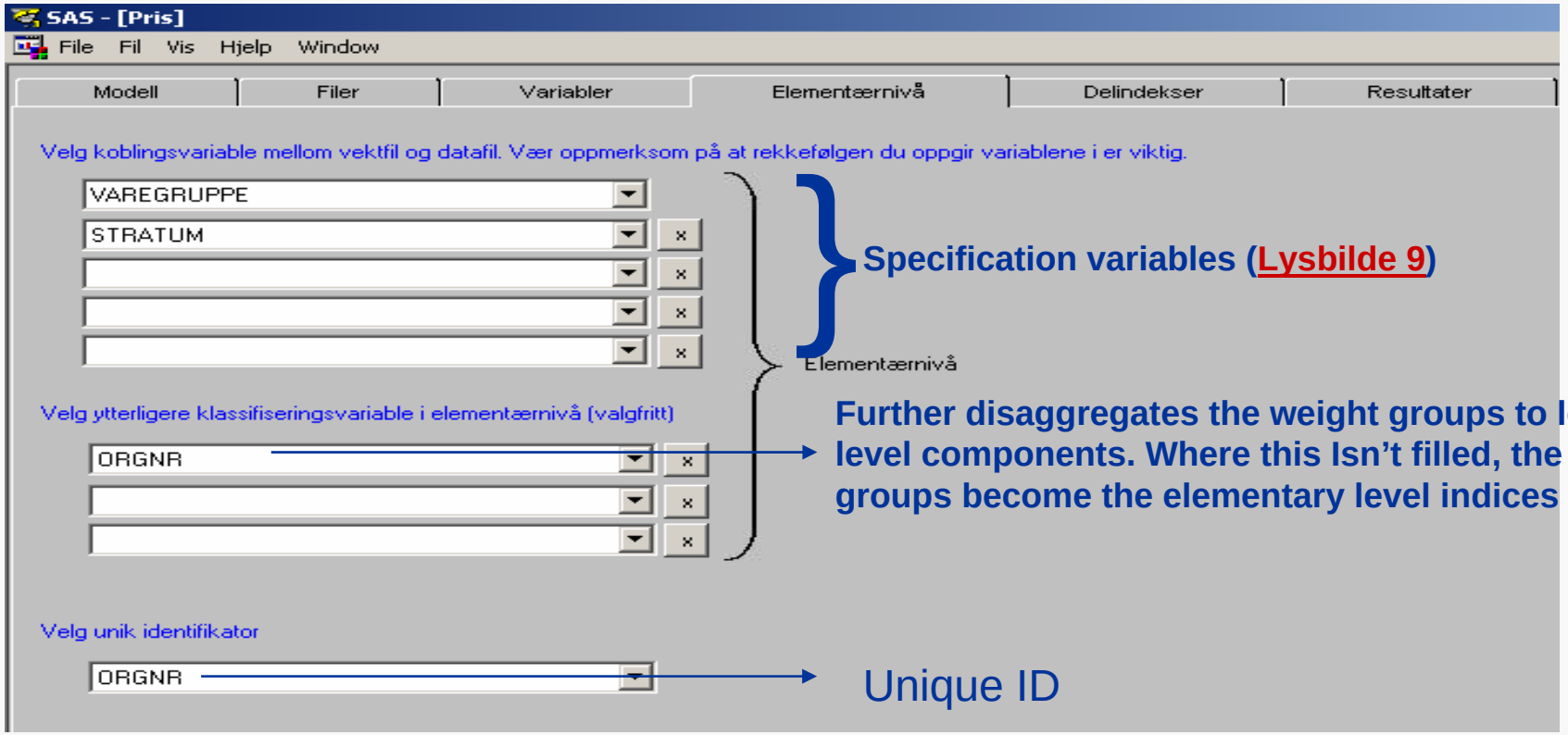
.....continued

- Variable specification
  - Prices: reference prices as well as current price
  - Weights
  - Chaining details**



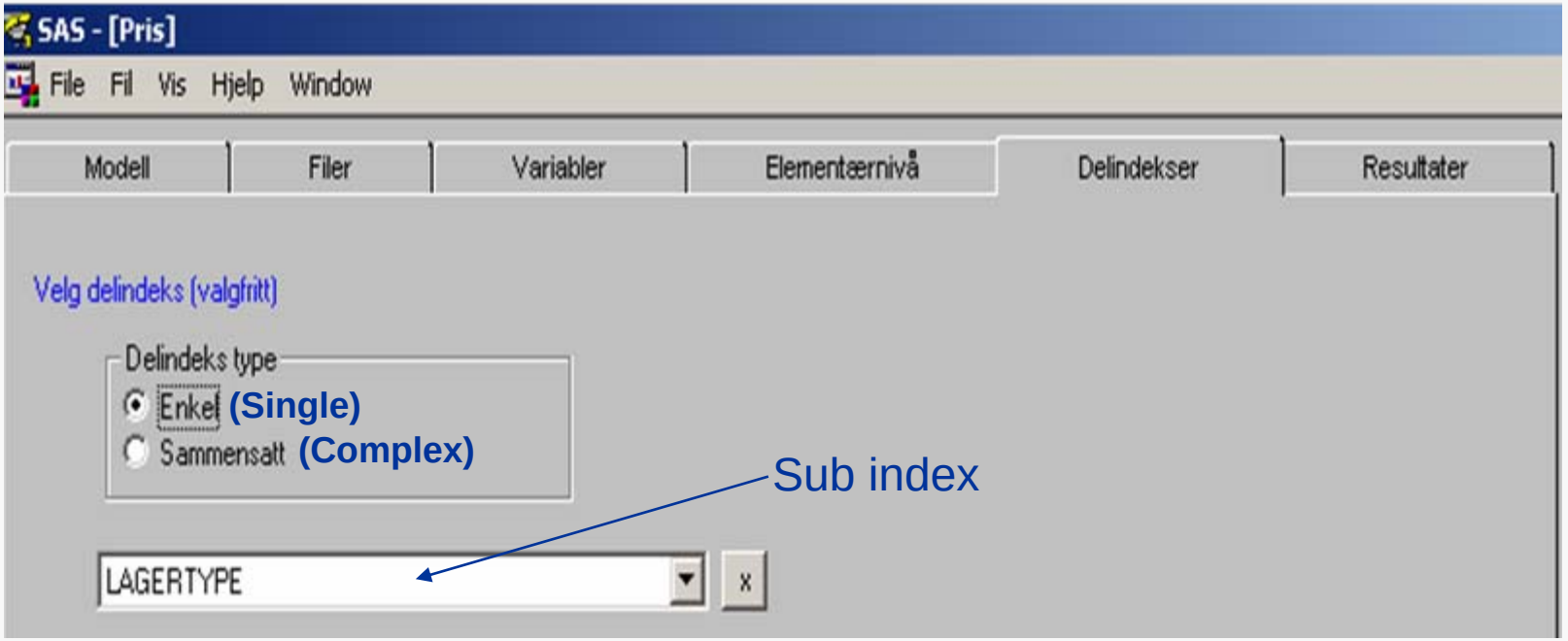
Integration of weights in to the application

- weights groups in DynaRev are referred to in a matching order as in the price data.
  - The variables must exist both in the weights data and price data
  - Special attention should be given to the hierarchy of aggregation.



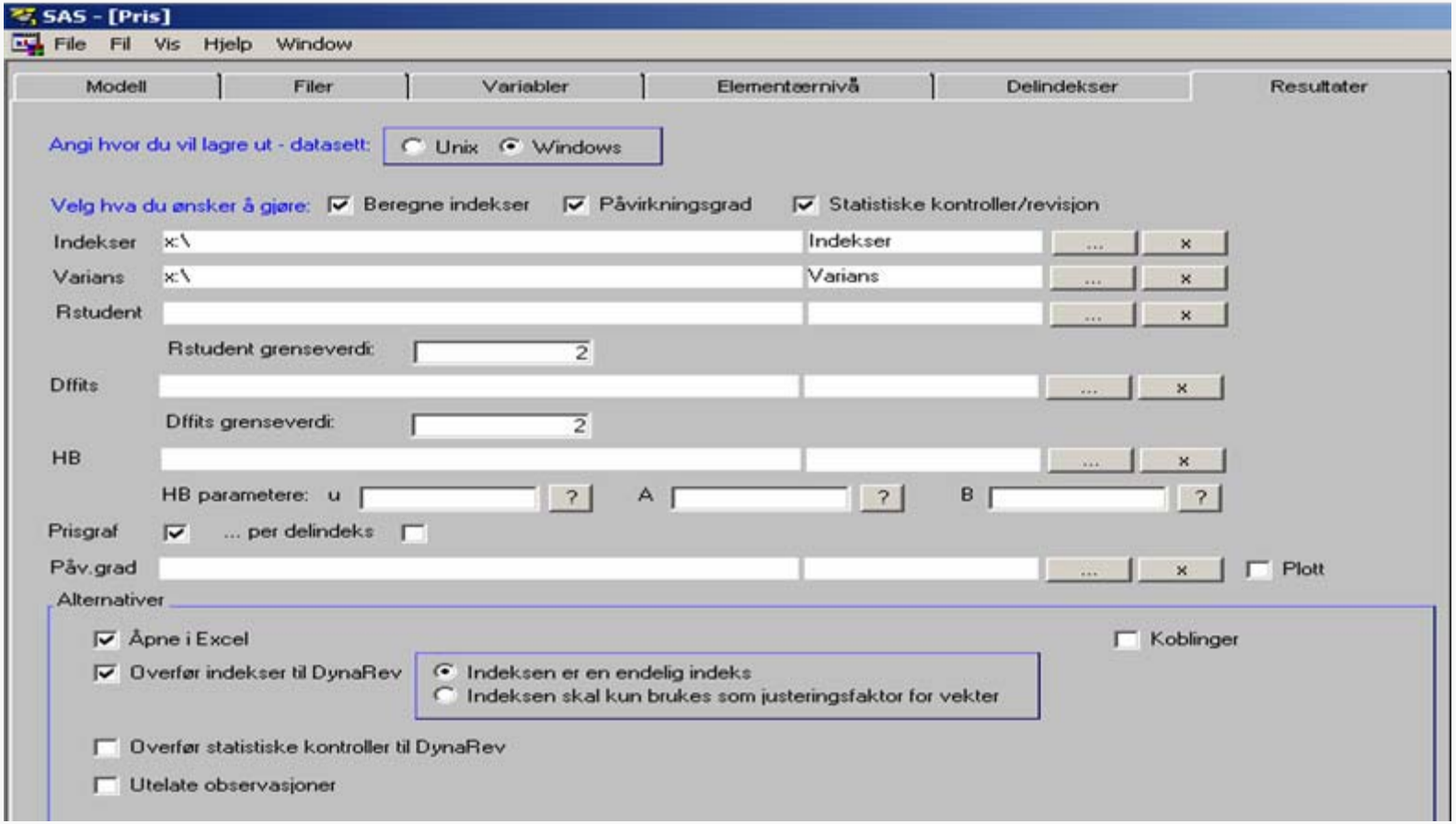
Output and display

- Defining sub indices
  - Single: sub indices are organized on the basis of one of the classification variables. Example: sub index by service type
  - Complex: Combines more than one classification variables. Example: sub index by stratum for every service type



.....Continued

- Results display



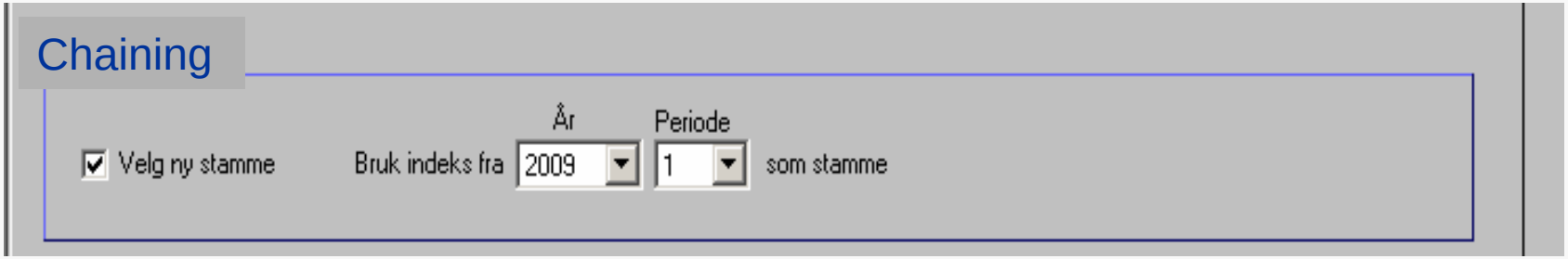
- Graphical presentation of prices. (Lysbilde 13)
- Results can be viewed in SAS-results viewer / html, SAS dataset, excel dataset
  - SAS Output.htm

.....Continued

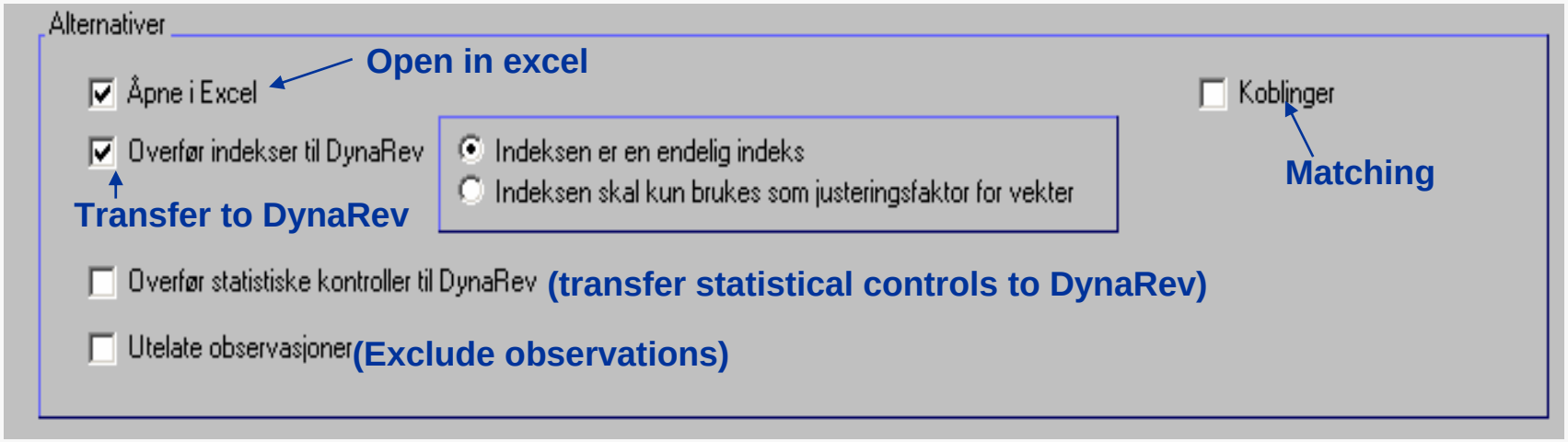
- Statistical estimates
  - Variance
  - Standard deviation
  - CV
  - LB and UB of confidence intervals
    - Lysbilde 14

Chaining in ”Pris”

- ”Pris” always generates a chained index. But for the chaining to be accurate a chaining reference must be specified. The index prior to the price reference period is set as a chaining reference.

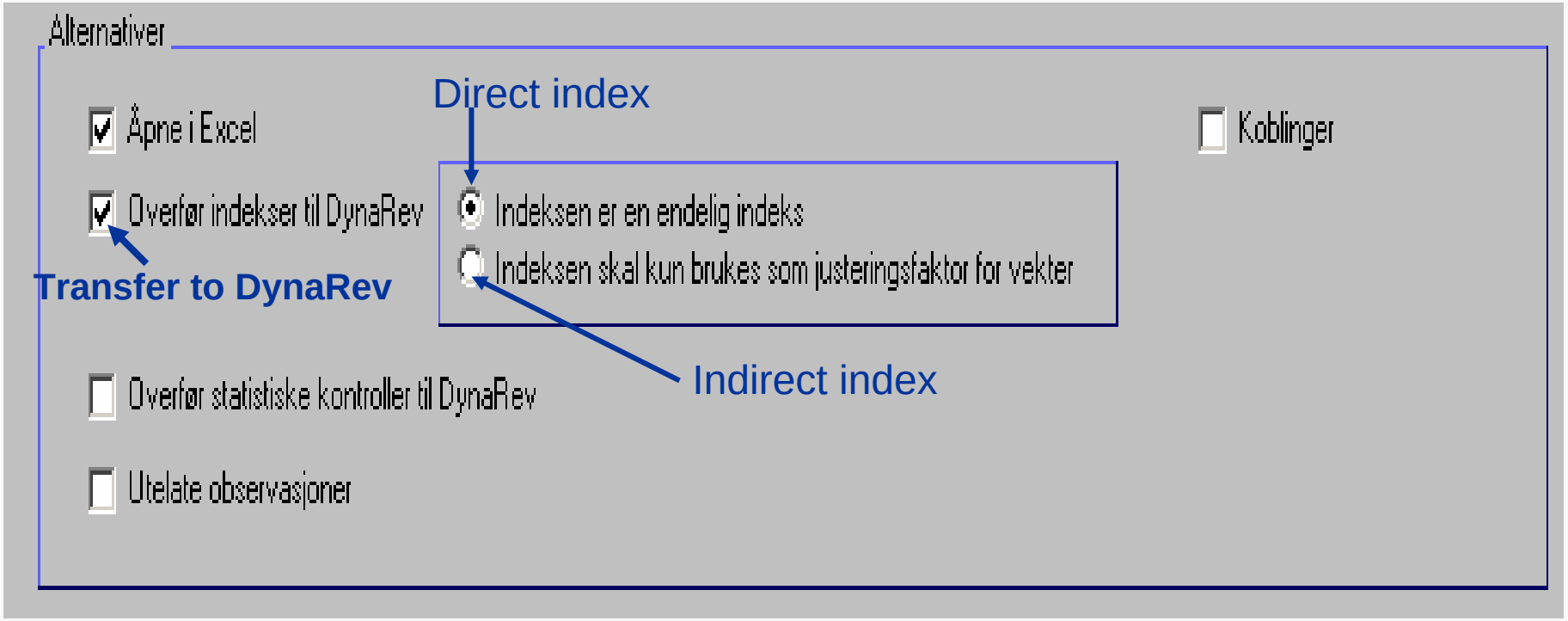


- The index to be utilized as a chaining reference had to be transferred to DynaRev in preceding periods



……..Chaining continued

- "Pris" allows for
  - Direct chaining
    - When changing only price reference period
    - When changing only weight
    - When changing both weights and price reference period
  - Indirect chaining (Price adjusted weights/ adjustment factor)
    - When changing only price reference period
    - When changing only weight
  - The adjustment factor for weights is calculated in "pris" and transferred in to DynaRev where the adjustment takes place
  - Lysbilde 17

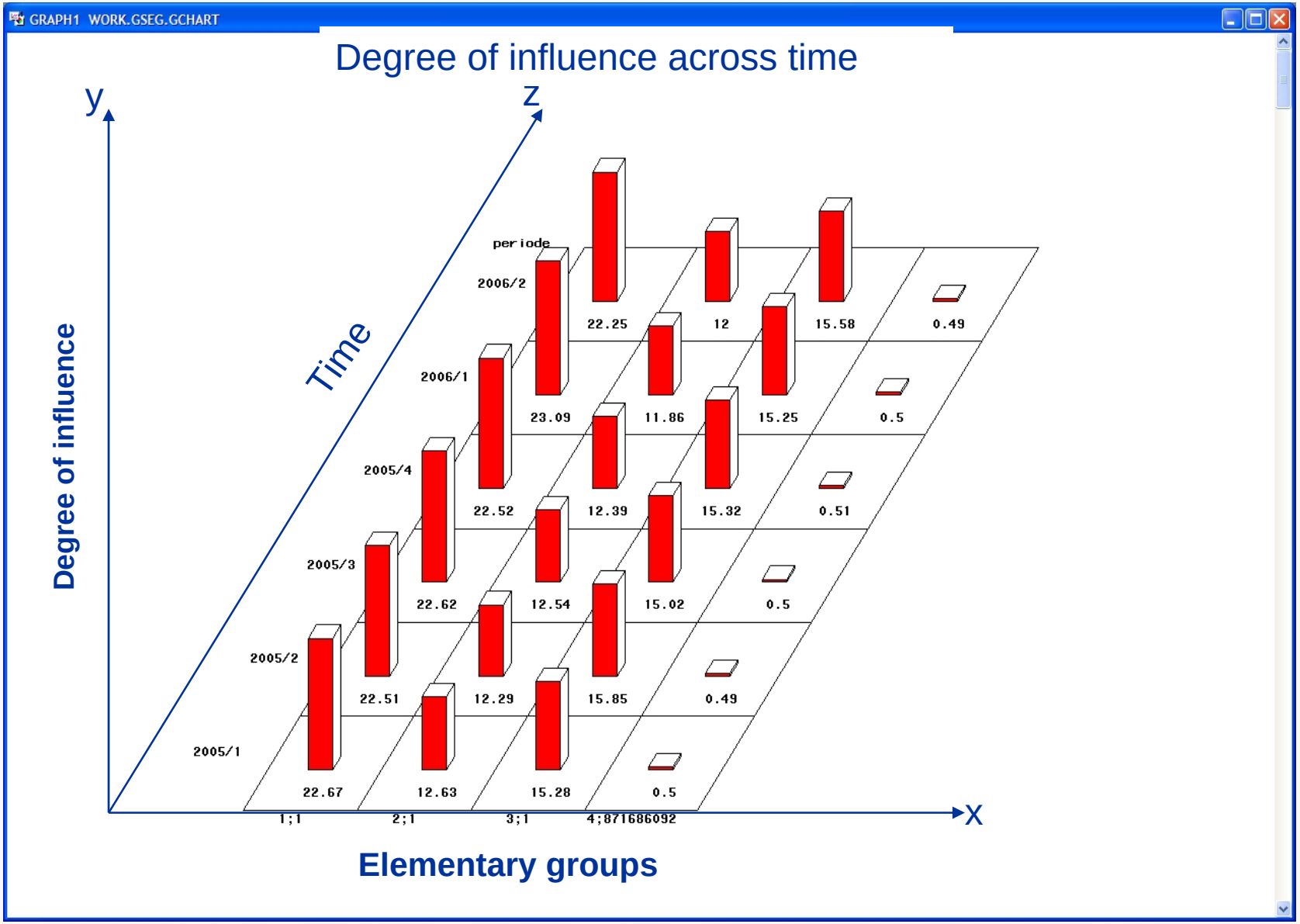

Alternativer
Åpne i Excel
Overfør indekser til DynaRev
Overfør statistiske kontroller til DynaRev
Utelate observasjoner
Koblinger
Indeksen er en endelig indeks
Indeksen skal kun brukes som justeringsfaktor for vekter
Direct index
Transfer to DynaRev
Indirect index

Controls in ”Pris”

- Data controls
  - Temporary exemption of observations (extreme values)
  - Matching between price data
  - Matching between price observations and weight groups
  - Chaining control: matches between elementary groups before and after the chaining reference period

  D:\Voorburg2009\Pris_SAS Output.htm
- Statistical controls
  - Rstudent, Dffits, HB, price graph

  (Lysbilde 19)
- Aggregate control:
  - Degree of influence – applies to a group of data and measures the degree to which an elementary group influences the total index


GRAPH1 WORK.GSEG.GCHART
Degree of influence across time
y
z
x
Time
Degree of influence
Elementary groups
periode
2006/2
2006/1
2005/4
2005/3
2005/2
2005/1
22.25
12
15.58
0.49
23.09
11.86
15.25
0.5
22.52
12.39
15.32
0.51
22.62
12.54
15.02
0.5
22.51
12.29
15.85
0.49
22.67
12.63
15.28
0.5
1;1
2;1
3;1
4;871686092

Thank you!