The treatment of unmatched items in rolling year GEKS price indexes:

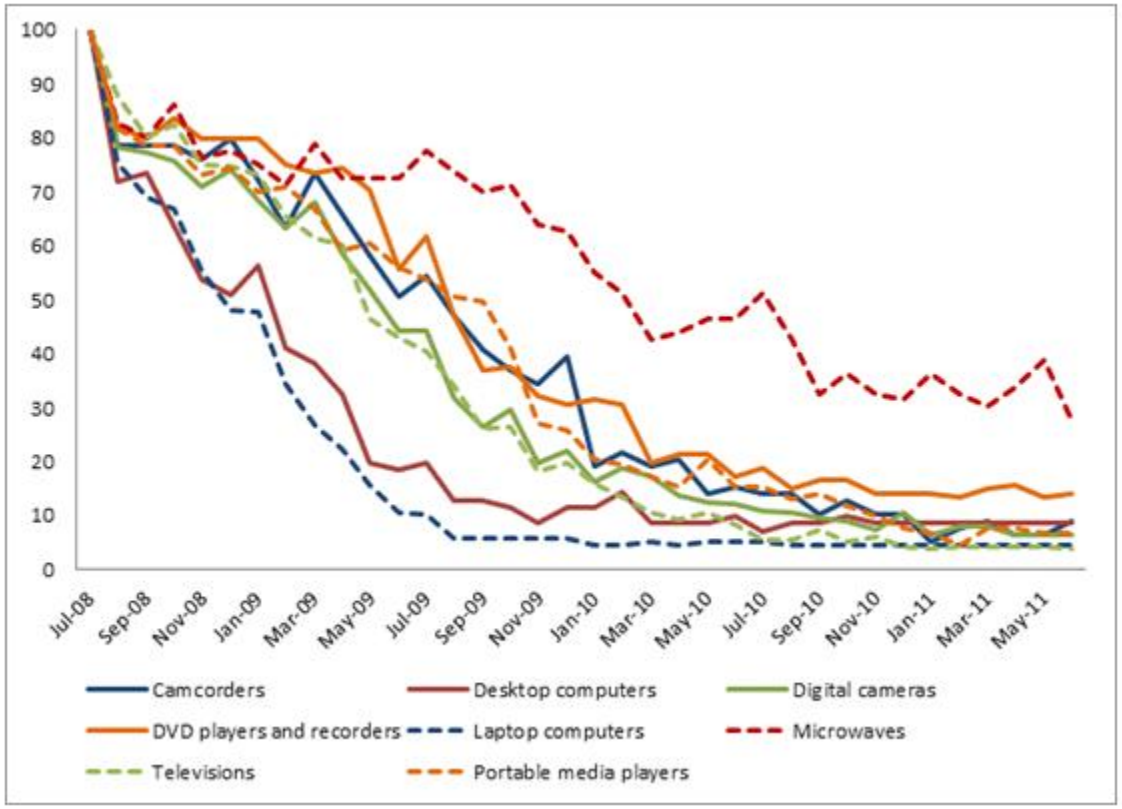
Evidence from New Zealand scanner data

Jan de Haan, Statistics Netherlands

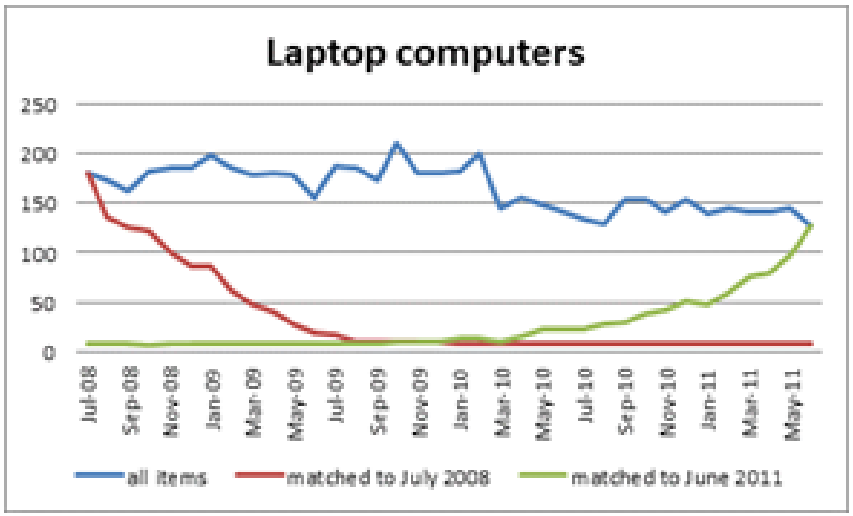
Frances Krsinich, Statistics New Zealand

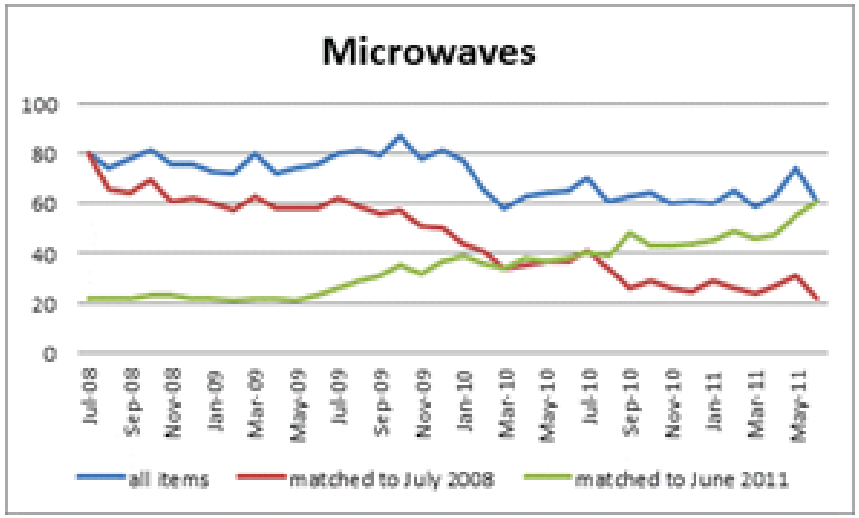
Geneva, May 2012

% June 2008 models still available

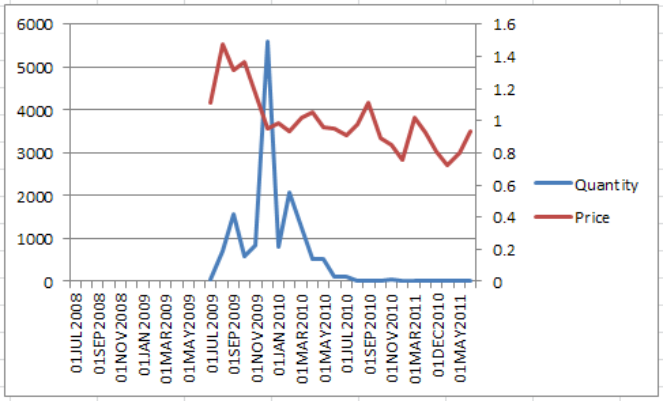


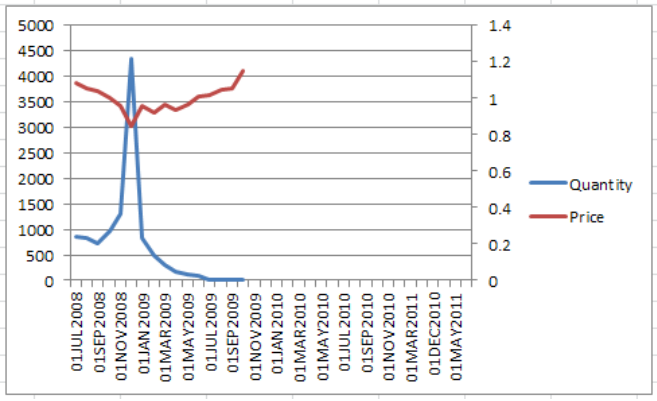
Churn

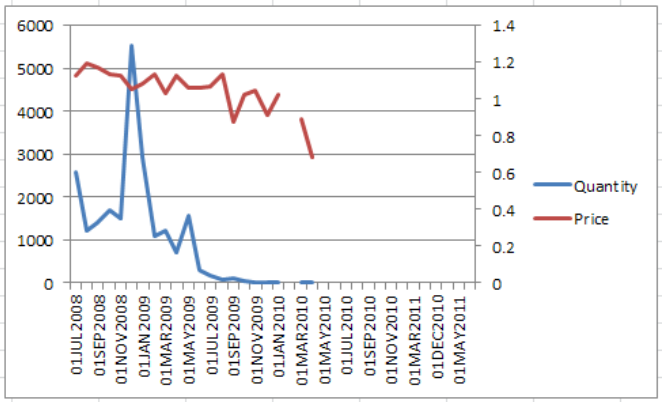

Laptop computers
250
200
150
100
50
0
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Jan-11
Mar-11
May-11
all items
matched to July 2008
matched to June 2011

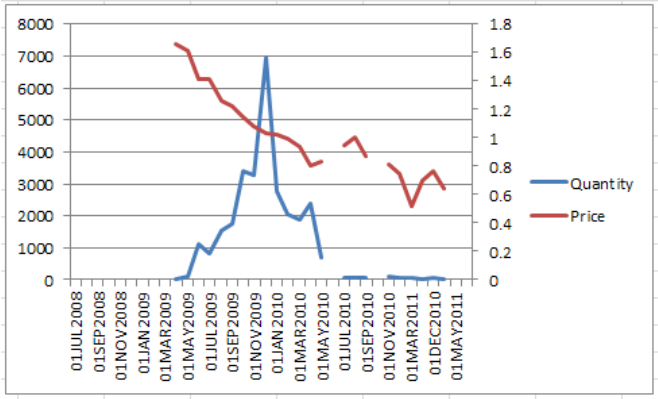

Microwaves
100
80
60
40
20
0
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Jan-11
Mar-11
May-11
all items
matched to July 2008
matched to June 2011

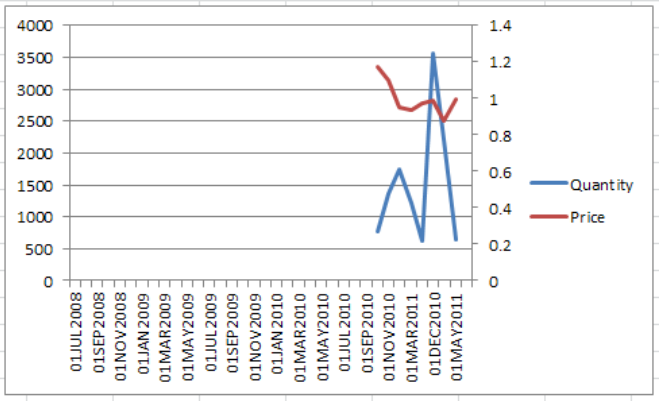
Digital cameras

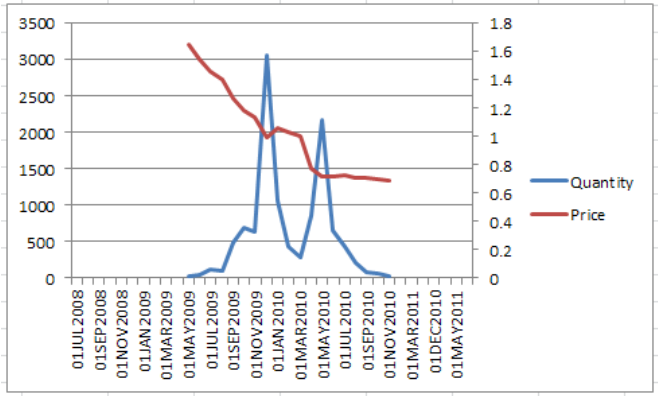




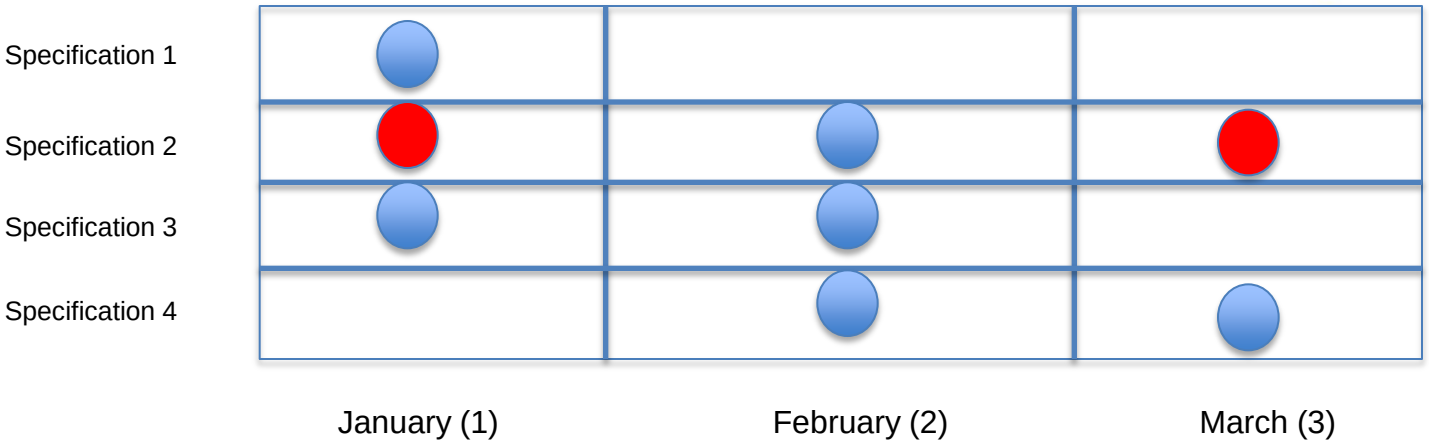








GEKS method



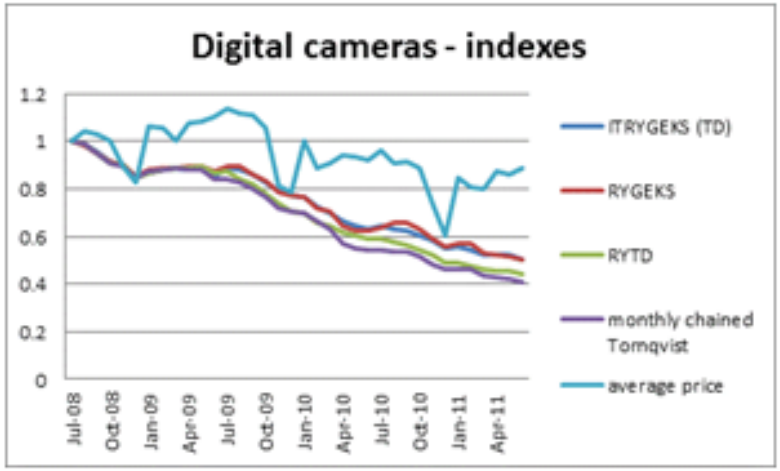
Superlative bilateral index (fisher, tornqvist etc) jan-mar ‘SI(1.3)’ based on  only.

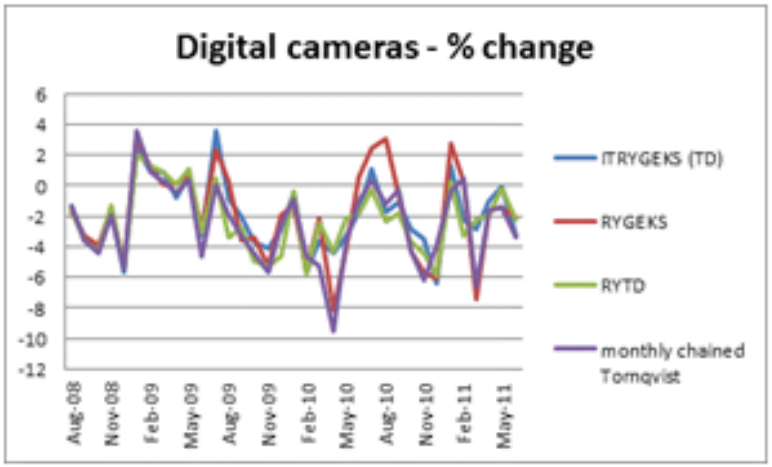
GEKS(1.3) =[SI(1.1)/SI(3.1) x SI(1.2)/SI(3.2) x SI(1.3)/SI(3.3)]^(1/3)

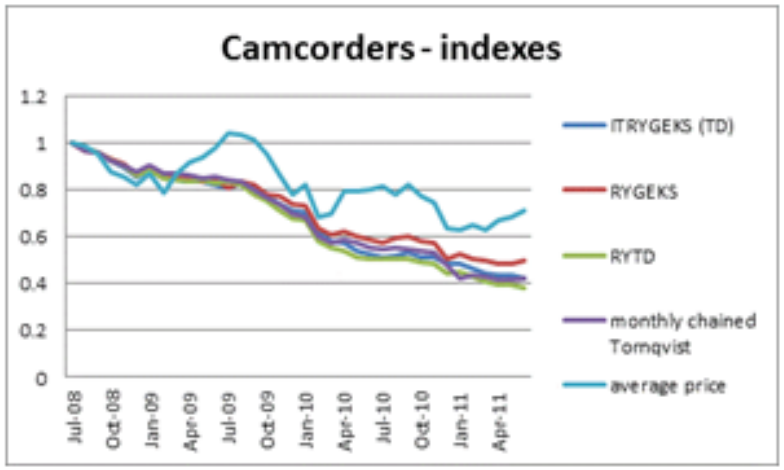
.. So all possible matches in the entire time series are used.

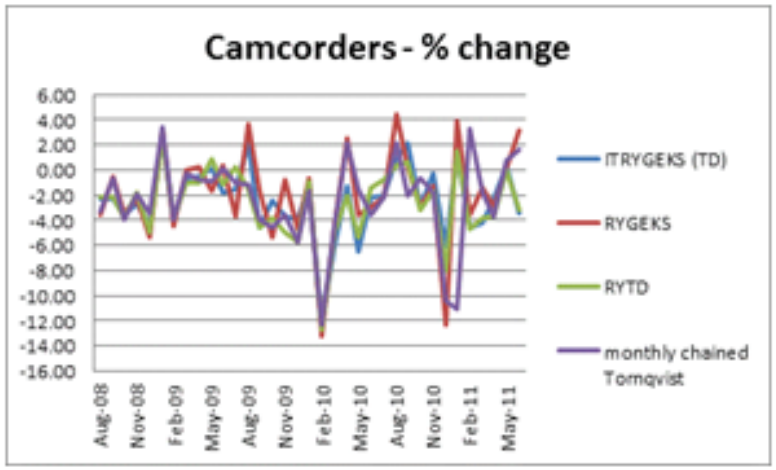
Imputation Tornqvist RYGEKS
(the weighted time dummy method)

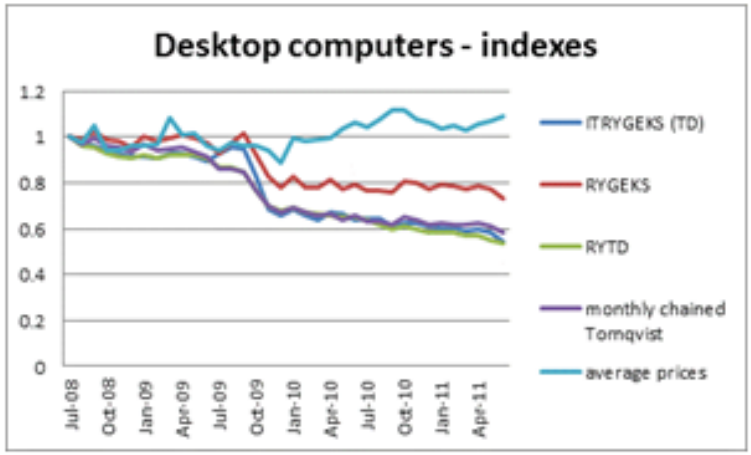
$$P_{TD}^{0t} = \exp \hat{\delta}^t = \prod_{i \in U^{0t}} \left(\frac{p_i^t}{p_i^0} \right)^{\frac{s_i^0 + s_i^t}{2}} \prod_{i \in U^0_{D(t)}} \left(\frac{\hat{p}_i^t}{p_i^0} \right)^{\frac{s_i^0}{2}} \prod_{i \in U^t_{N(0)}} \left(\frac{p_i^t}{\hat{p}_i^0} \right)^{\frac{s_i^t}{2}} .$$

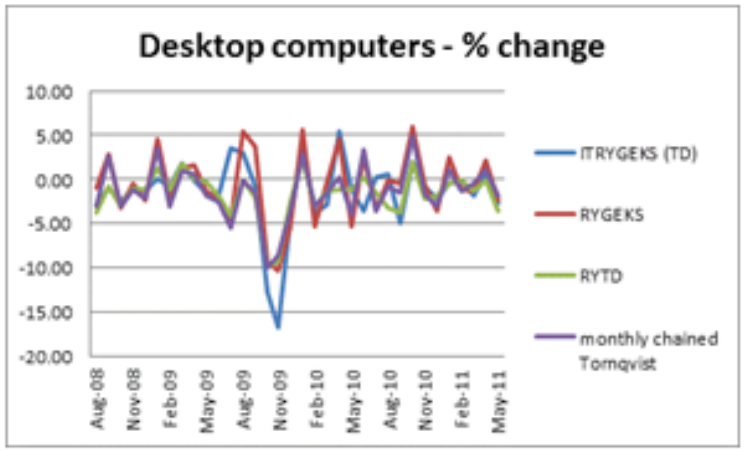

Digital cameras - indexes
1.2
1
0.8
0.6
0.4
0.2
0
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist
average price

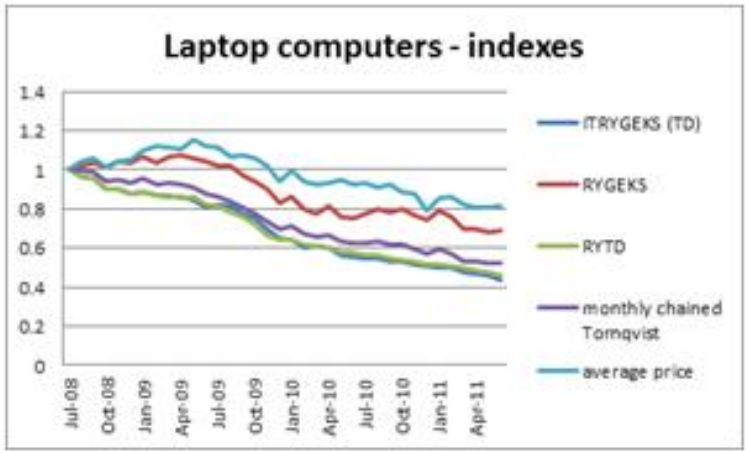

Digital cameras - % change
6
4
2
0
-2
-4
-6
-8
-10
-12
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Feb-11
May-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist

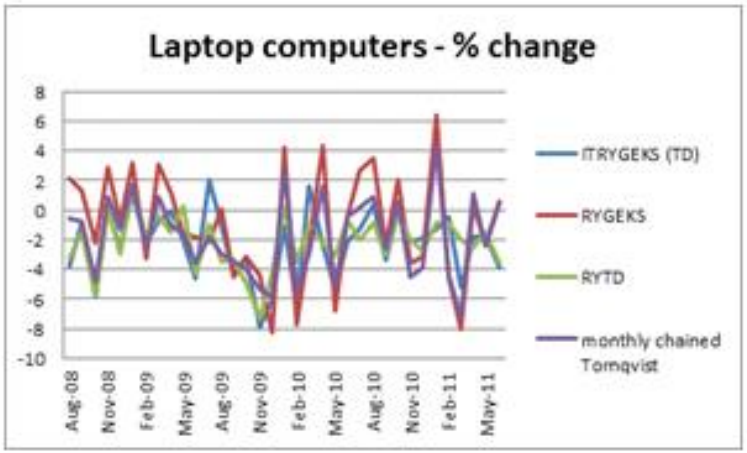

Camcorders - indexes
1.2
1
0.8
0.6
0.4
0.2
0
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist
average price

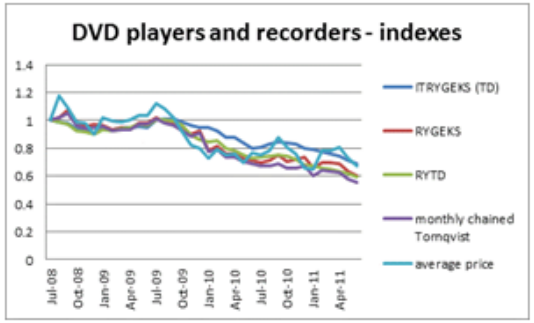

Camcorders - % change
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
-14.00
-16.00
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Feb-11
May-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist

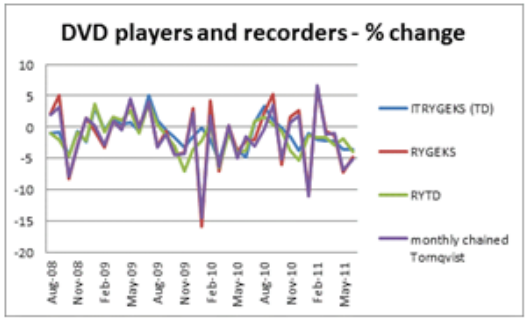

Desktop computers - indexes
1.2
1
0.8
0.6
0.4
0.2
0
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist
average prices

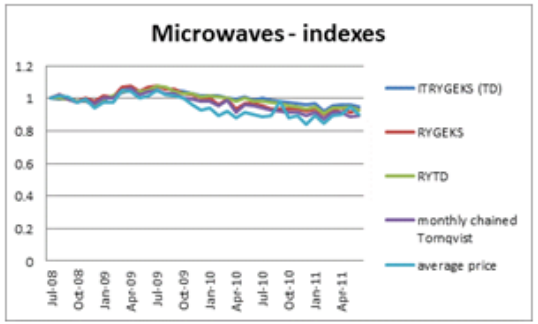

Desktop computers - % change
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Feb-11
May-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist

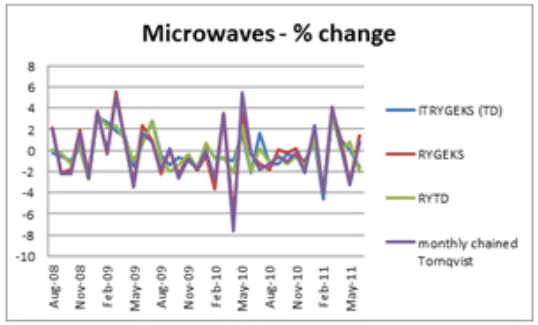

Laptop computers - indexes
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jul-08
Oct-08
Jan-09
Apr-09
Jul-09
Oct-09
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist
average price

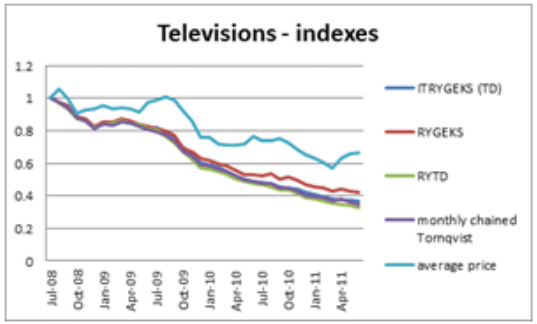

Laptop computers - % change
8
6
4
2
0
-2
-4
-6
-8
-10
Aug-08
Nov-08
Feb-09
May-09
Aug-09
Nov-09
Feb-10
May-10
Aug-10
Nov-10
Feb-11
May-11
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist

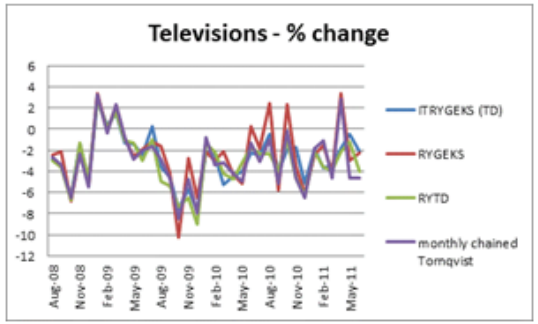


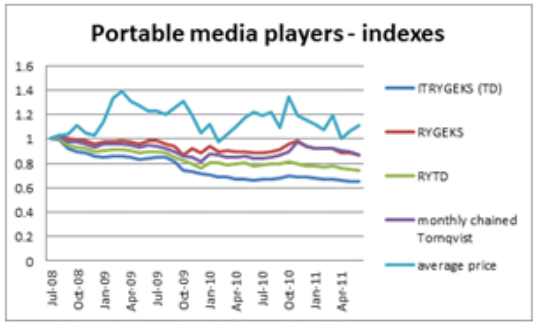


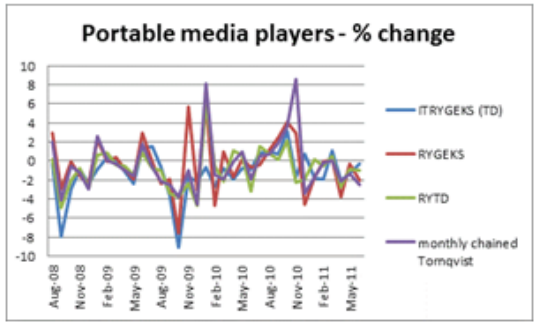




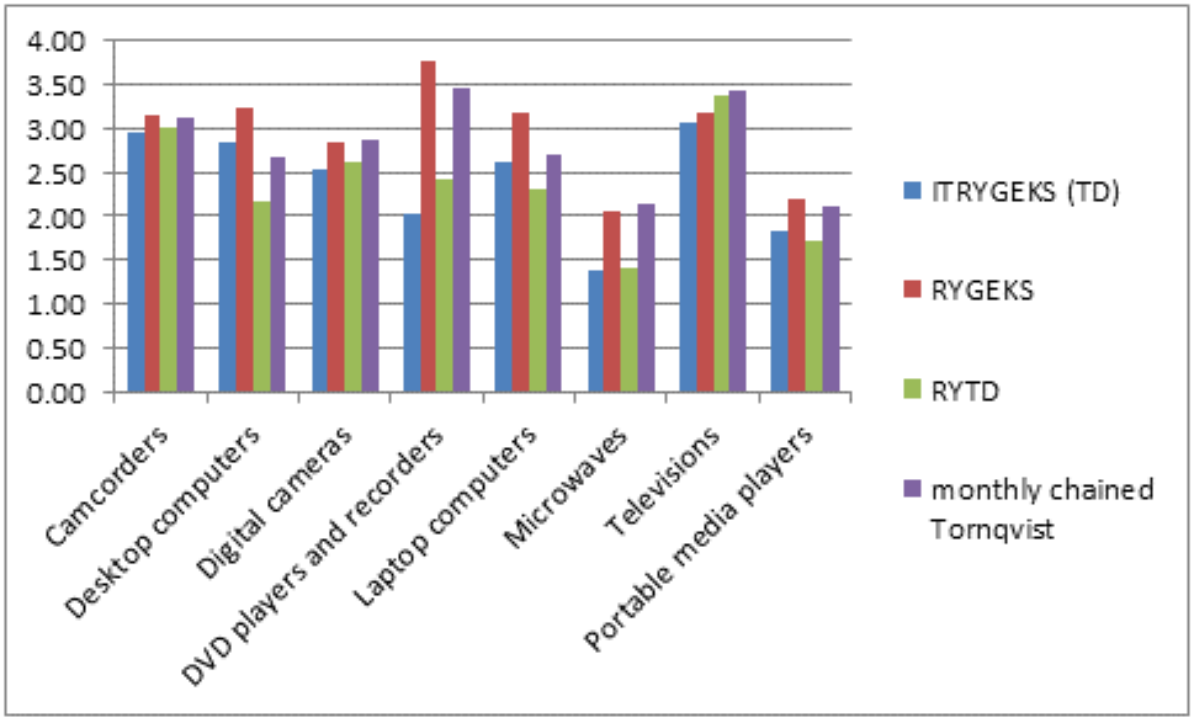








Volatility


4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Camcorders
Desktop computers
Digital cameras
DVD players and recorders
Laptop computers
Microwaves
Televisions
Portable media players
ITRYGEKS (TD)
RYGEKS
RYTD
monthly chained Tornqvist

Aggregated to ‘consumer electronics’