

3 Hedonic Index Using Scanner Data

- As it is difficult to collect prices of products with an equivalent quality continuously because of rapid quality changes, for two items “**Desktop PCs**” and “**Notebook PCs**”, newly included in the 2000 revision, average price and number of units sold for each product derived from **scanner data**, collected from 3,400 major electric appliance shops across the country are used for compiling price indices instead of the RPS. Hedonic method is applied to compile price indices for the two items. Their influence to total CPI is limited since share of weight for either Desktop or Notebook is only 0.22% in the 2000 basis.
- For “**Digital cameras**”, which composes “Cameras” item index from 2003, the price movement is calculated in the same method. The weight for Cameras is only 0.07% including analog cameras.
- Their movements are checked compared with results through other methods for quality change including matched methods.

Hedonic Formula

$$\ln p_{ij} = \alpha_t + \beta_t d_i + \sum_k \gamma_{tk} x_{ik} + \varepsilon_i$$

p_{ij} price

j time $j = t, t + 1$

i product

$\alpha_{ij}, \beta_t, \gamma_{tk}$ partial regression coefficient

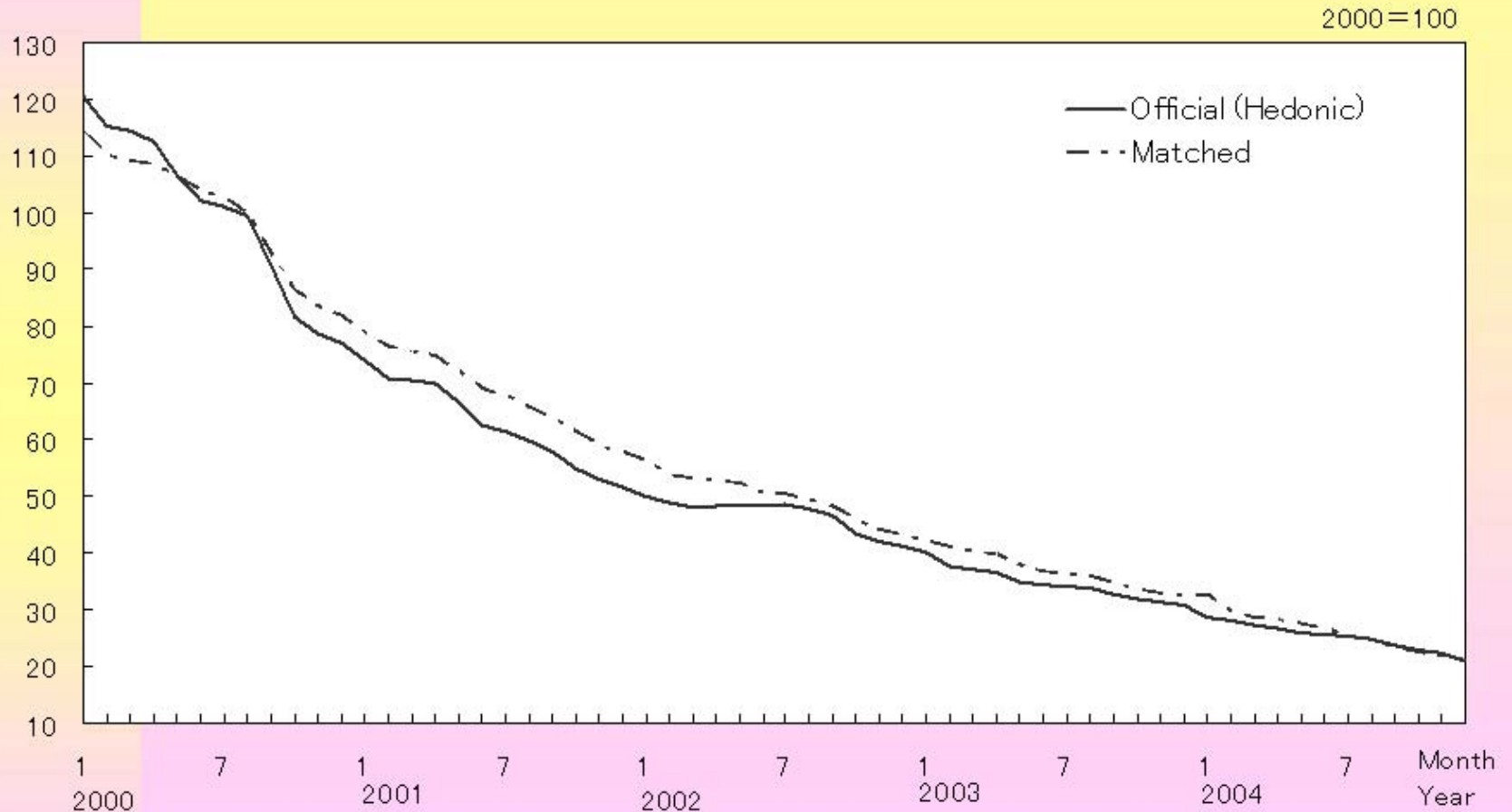
x_{ij} characteristic

ε_i residual

d_i time dummy $0(j = t), 1(j = t + 1)$

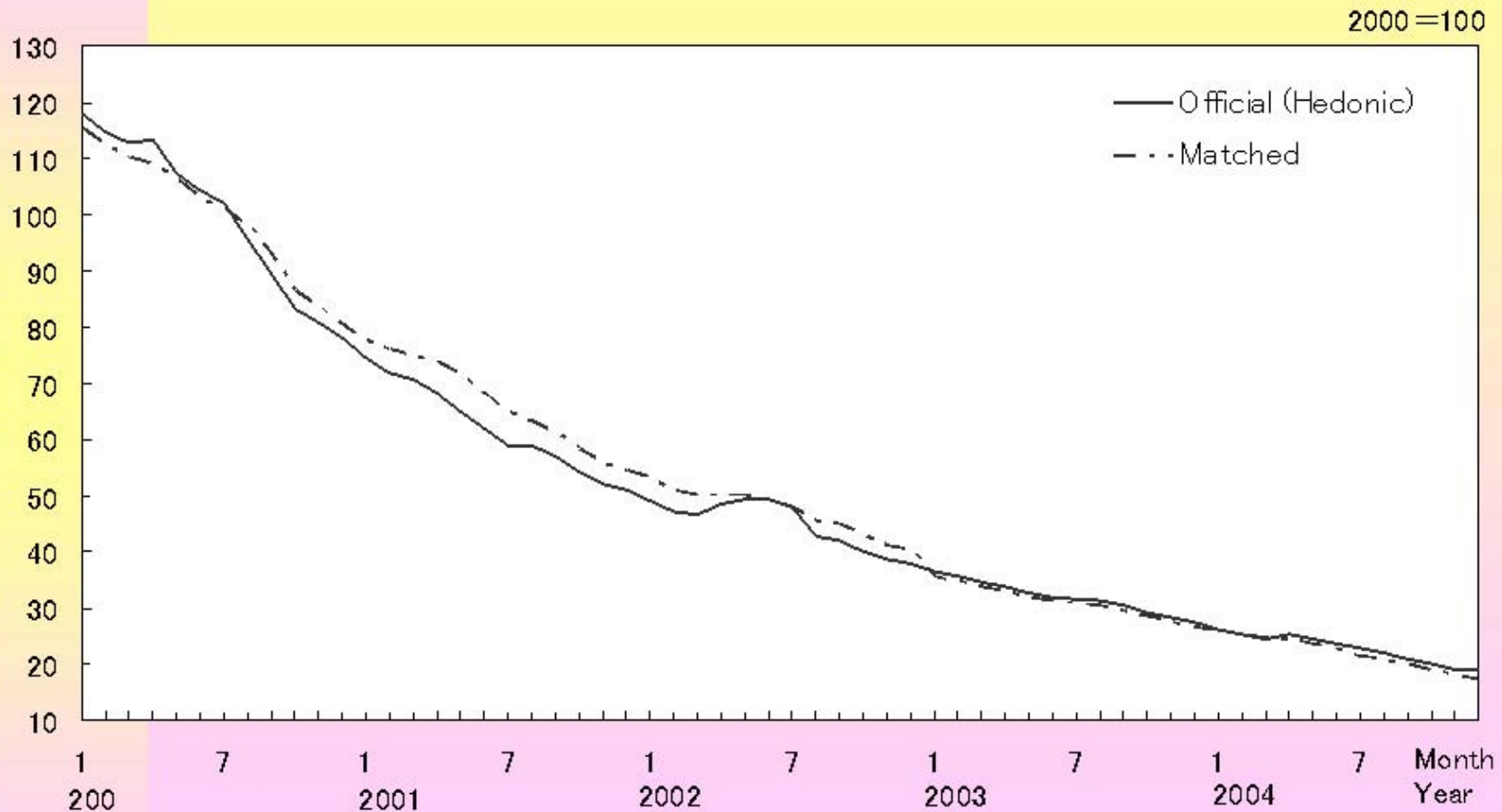
$$I = 100 \times \prod_t \exp \beta_t$$

Figure 3-1 Price Indexes for PCs (Desktop)



Matched Index is a chained Fisher type index calculated with prices and units sold for each product existing in both the previous month and the current month.

Figure 3-2 Price Indexes for PCs (Notes)



Matched Index is a chained Fisher type index calculated with prices and units sold for each product existing in both the previous month and the current month.

Table 3-1 Price Change of PCs (Notes) for Recent Two Years

	Jan. 2003	Jan. 2005
Official (Hedonic)	100.0	50.1
Matched	100.0	46.2
Retail Price Survey	100.0	48.9

Matched Index is a chained Fisher type index calculated with prices and units sold for each product existing in both the previous month and the current month.

The index by the Retail Price Survey is calculated by the geometric mean of average price changes per product during the observation period; the period existing as a new model in the market from Jan. 2003 to Jan. 2005, excluding data when number of them is less than two per product at the beginning of the observation period.

**Table 3-2 Hedonic Formula for PCs (Desktop) from October 2004
Results at Nov. 2004**

	coefficient	t-value
α_t	11.53923	161.28
d_t	-0.02976	-5.53
maker group	-0.11627	-4.68
processor: CELERON	-0.05452	-6.68
Built-in TV tuner	0.05553	5.08
square of display size (inch ²)	1.260E-03	16.61
HDD (GB)	1.010E-03	10.97
CPU clock freq. (MHz)	5.158E-05	7.81
main memory (MB)	3.753E-04	11.51
none of local wave digital tuner	-0.27603	-4.18
none of DVD recorder	-0.22342	-7.33
independent TV function	0.07438	8.27
period after release		
3 months or longer but shorter than 6 months	-0.17434	-14.79
6 months or longer but shorter than 12 months	-0.21139	-21.66
12 months or longer	-0.35446	-13.27
number of items (total both in previous and current month)	640	
adj.R ²	0.9078	