

## **The 2005 Base Corporate Goods Price Index** **Hedonic Regression Model for Quality Adjustment<sup>1</sup>** **– Digital Cameras –**

The Bank of Japan (BOJ) compiles the Corporate Goods Price Index (CGPI) which focuses on the prices of goods traded among corporations. BOJ surveys the prices of the representative products in each commodity category and when they lose their representativeness in the market, they are replaced accordingly. To account for price changes with the quality being constant, quality adjustments between old and new products need to be done. BOJ employs various quality adjustment methods and hedonic regression method is one of them. BOJ has updated the regression model for “digital cameras.” See the appendix 1 for the results.

The details of samples for the estimation are as follows.

- I. The price data for digital cameras are taken from “BCN Ranking,” the BCN Inc. database. The price data for digital cameras are retail prices at the large-size electrical appliance retailers, unlike sample prices of CGPI, which are transaction prices among corporations.
- II. Specifications for each product are taken from the “BCN Ranking” and brochures of the products.
- III. The number of the observations for compact digital cameras is 123. The data from 2011/Q2 to 2012/Q1 are used to estimate the hedonic regression models, which is adopted from May 2012 for the quality adjustment. When the observations include the data of the same products as shipped in several quarters, the first data are used for the estimation<sup>2</sup>.

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<sup>1</sup> For more details, see the [Outline of “Corporate Goods Price Index \(CGPI, 2005 base\)”](#) on BOJ website.

<sup>2</sup> Sample prices of CGPI are usually replaced by the prices of corresponding new products soon after the release. Therefore, the use of the first observation to estimate may be the best corresponding to quality adjustment of sample prices.

## Estimation Result for Compact Digital Cameras

Estimated Model	2011/Q2~2012/Q1	(Ref.) 2010/Q4~2011/Q3
	Double Box-Cox Model	Semi Log-Linear Model
Box-Cox Parameter of Dependent Variable	-0.193	--
Intercept	-494.700 **	9.000 ***
Optical Zoom (times)	0.001 ***	0.013 ***
Box-Cox Parameter	1.128	--
Number of Images you can record (shots)	9.413E+02 **	4.132E-04 *
Box-Cox Parameter	-1.886	--
Continuous Shooting Speed (shots/sec.)	--	1.668E-03 *
Box-Cox Parameter	--	--
Dummy Variables		
CCD Size not less than 1/1.8 inches	0.128 ***	0.857 ***
Full HD (High-Definition) Movie	0.033 ***	0.138 **
LCD Size		
not less than 3 inches	0.026 ***	0.121 **
ISO Rating not less than 3200	0.024 **	0.211 ***
Shake Reduction, Optical / CCD-shift	0.019 *	0.331 ***
Waterproof	0.043 ***	0.379 ***
GPS	--	0.150 **
HDMI output	0.024 *	0.175 **
Producer		
Producer A	0.131 ***	0.807 ***
Producer B	0.056 **	--
Producer C	0.070 ***	--
Period		
2011/Q1	--	1.208E-04
2011/Q2	--	-0.015
2011/Q3	0.022	0.023 ***
2011/Q4	0.010	--
2012/Q1	0.009	--
R <sup>2</sup>	0.808	0.853
Adjusted R <sup>2</sup>	0.781	0.830
Standard Error of Regression	0.037	0.223
Mean of Dependent Variable	4.440	10.057
Number of Observations	123	111

Note: \*\*\*, \*\*, \* denote significance at the 1%, 5%, 10% level respectively.