Monday, June 11, 2012

The 2005 Base Corporate Goods Price Index
Hedonic Regression Model for Quality Adjustment[1]
– Video 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 "video cameras." See the appendix 1 for the results.

The details of samples for the estimation are as follows.

I.   The price data for video cameras are taken from "BCN Ranking", the BCN Inc. database. The price data for video 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 video cameras is 64. The data from 2010/Q2 to 2012/Q1 are used to estimate the hedonic regression model, 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[2].

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[1]   For more details, see the Outline of "Corporate Goods Price Index (CGPI, 2005 base)" on BOJ website.

[2]   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 Video Cameras

	2010/Q2~2012/Q1	(Ref.)2009/Q2~2011/Q1
Estimated Model	Box-Cox Model	Box-Cox Model
Box-Cox Parameter of Dependent Variable	-0.234	0.259
Intercept	-69.449 **	-98.783 **
Effective Pixels of Moving Pictures (10k pixels)	0.027 ***	99.081 ***
Box-Cox Parameter	-0.164	-0.659
Media Storage Capacity (Embedded, GB)	0.011 ***	1.935 ***
Box-Cox Parameter	0.157	0.099
Minimum Illumination (lux)	-5.240E-03 ***	-0.709 ***
Box-Cox Parameter	0.851	0.944
Battery Life (when shooting movies, min)	160.321 **	--
Box-Cox Parameter	-2.189	--
LCD Size (inches)	--	17.015 ***
Box-Cox Parameter	--	0.223
Dummy Variables		
Shake Reduction, Optical	0.011 **	4.426 ***
LCD Size over 3.5 inches	0.014 ***	--
Producer		
Producer A	-0.030 **	--
Period		
2009/Q3	--	-10.932 ***
2009/Q4	--	-8.413 ***
2010/Q1	--	-12.444 ***
2010/Q2	--	-13.972 ***
2010/Q3	-4.510E-03	-14.031 ***
2010/Q4	0.022 **	-10.119 ***
2011/Q1	-3.407E-04	-13.628 ***
2011/Q2	-4.187E-03	--
2011/Q4	2.809E-03	--
2012/Q1	-6.263E-03	--
R^2	0.939	0.878
Adjusted R^2	0.923	0.850
Standard Error of Regression	0.011	3.247
Mean of Dependent Variable	3.936	64.809
Number of Observations	64	67

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