## Bank of Japan

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Research and Statistics Department

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## 2000 Base Corporate Goods Price Index Hedonic Regression Model for Quality Adjustment<sup>1</sup> –Digital Cameras–

The Bank of Japan compiles the index of "digital cameras" in the 2000 base Corporate Goods Price Index (CGPI). When the sample prices of this commodity surveyed for compilation of the index are replaced, the quality difference between old and new sample prices are adjusted by the hedonic regression method.<sup>2</sup> The Bank updated the hedonic regression model. The details of the estimation are as follows.

- I. The price data for digital cameras are retail prices at the large-size household electrical appliance retailers of all parts of Japan, taken from a Point-of-Sales (POS) data from GfK Marketing Services Japan Ltd.
- II. Spec. data for each product are taken from the GfK data base and brochures of the products.
- III. The sample range for analysis is the last eight quarters, and the number of the observations is 209. The data from 2005/Q3 to 2007/Q2 are used to estimate the hedonic regression model, which is adopted from August 2007 for the CGPI. When the observations include the data of the same products as shipped in consecutive quarters, the first data is selected.<sup>3</sup>

<sup>&</sup>lt;sup>1</sup> For more detail, see the "Explanation of Corporate Goods Price Index (CGPI)" on the Bank of Japan (BOJ) website, <u>http://www.boj.or.jp/en/theme/research/stat/pi/cgpi/index.htm</u>.

<sup>&</sup>lt;sup>2</sup> The hedonic regression method is one of the quality adjustment methods. This method is used to calculate the part of the price changes that correspond to the change in quality accompanying the shift to the new sample prices.

<sup>&</sup>lt;sup>3</sup> The sample price of CGPI is usually replaced by the price of corresponding new product soon after its release. Therefore, use of first observation of the data to estimate may be the best corresponding to quality adjustment of the sample price.

## (Appendix)

## Estimation Result for Digital Cameras

Box-Cox Primiter         0.372         0.644           Bisser Model         Box-Cox Primeter        7722.4. "         CD Size (inches)         0.336 '''         0.336 '''         0.336 '''         0.886 '''         District (inches)         Size (inche		2005/3Q-2007/2Q	(Ref.) 2005/1Q-2006/4Q
Examination model         Box-Cox Nuclei         Box-Cox Nuclei           Intercept	Box-Cox Prameter	0.372 Den Can Madal	0.644 Den Cen Medel
Intercept         -6/3.952        3722.4           LCD Size (inches)         0.336         0.886           Box-Cox Prameter         4.822         6.234           Effective Pixels of Pictures (10k pixels)         311.501         "         238507           Box-Cox Prameter         0.342         -0.610         -0.342         -0.610           Optical Zoom (times)         2.854         "         292.807         "           Box-Cox Prameter         0.814         -0.510         -         -         425.016         -           Box-Cox Prameter         2.498         - <td></td> <td>Box-Cox Model</td> <td>Box-Cox Model</td>		Box-Cox Model	Box-Cox Model
LD Size (inches)       0.356       0.856       0.856         Box-Cox Prameter       4.822       6.234         Effective Fixels of Pictures (10k pixels)       311.501       2.3850.7       .         Box-Cox Prameter       0.344       -0.610       .       .         Box-Cox Prameter       0.814       -0.510       .       .       .         Box-Cox Prameter       2.498       . <t< td=""><td>Intercept</td><td>-675.952</td><td>-37225.4</td></t<>	Intercept	-675.952	-37225.4
Box Cox Prameter         4.822         0.234           Box Cox Prameter         -0.342         -0.610           Oprical Zoom (rimes)         2.854 ***         2.92.807 ***           Box Cox Prameter         0.814         -0.510           Box Cox Prameter         0.484         -0.510           Box Cox Prameter         2.498         -**           Box Cox Prameter         2.498         -**           Box Cox Prameter         -**         -425.016 *           Box Cox Prameter         -**         -8.236           Battery Type         -**         -2.25.016 *           Lithium-ion Battery         -**         -           Optical / Mechanical         4.297 ***         -**           Waterproof         12.355 ***         120.234 ***           Movie Mode         0.886 ***         138.588 **           Movie Mode         -**         -**           Matting         -**         63.310 ***           Ower 1600         6.920 ***         -**           CD Size         -**         63.310 ***           Outcer A         5.600 ***         52.677 **           Producer B         -4.547 ***         -120.600 ***           Producer C         33.813 *	LCD Size (inches)	0.336	0.886
Effective Process of Produces (10k pixels)         311.301         2.880.7         2.880.7         0.610           Optical Zoom (times)         2.854         202.807         0.610           Box-Cox Prameter         0.814         -0.510           Min. Focal Length (35mm Equivalent)         -0.004            Box-Cox Prameter         2.498            Box-Cox Prameter         2.498            Bactery Type          -425.016            Battery Type          215.203            Lithium-ion Battery          215.203            Stake Reduction           266.443            Optical / Mechanical         4.297              Waterproof         12.355         120.234 <td>Box-Cox Prameter</td> <td>4.822</td> <td>6.234</td>	Box-Cox Prameter	4.822	6.234
BOAL-0A Pranteter $-0.42$ $-0.610$ Doptical Zoom (times) $2.854$ $2.92407$ Box-Cox Prameter $0.814$ $-0.510$ Min, Focal Length (35mm Equivalent) $-0.004$ $-$ Box-Cox Prameter $2.498$ $-$ Macro Focus Distance (cm) $ -425.016^+$ Box-Cox Prameter $ -$ Shake Reduction $ -$ Optical / Mechanical $4.297^+$ $-$ Weight $ -$ over 300g $  286.443^+$ Movie Mode $  286.443^+$ Myoite Mode $  -$ Movie Mode $  -$ Movie Mode $  -$ Over 1600 $6.920^+$ $ -$ CCD Size $   -$ Ower 1/1.8 $   -$ Dummy for Producer $-$	Effective Pixels of Pictures (10k pixels)	311.501	23850.7
Optical Zoom (times)         2.834         202.807           Box-Cox Prameter         0.814         0.510           Macro Focus Distance (cm)         -         -           Bact-Cox Prameter         2.498         -           Macro Focus Distance (cm)         -         -           Batcery Type         -         -           Lithium-ion Battery         -         -           Optical / Mechanical         4.297         -           Optical / Mechanical         4.297         -           Weight         -         -           over 300g         -         -         286.443           Movie Mode         -         -         -           Movie Mode         -         -         -           Merget         20.886         138.588         -           ISO Rating         -         -         -           over 1600         6.920         -         -           Cralle         7.118         -         -           Cralle         7.118         -         -           Dummy for Producer         -         -         -           Producer A         5.600         -         -	Box-Cox Prameter	-0.342	-0.610
Box-Cox Prameter         0.814         -0.310           Box-Cox Prameter         2.498         -           Macro Focus Distance (cm)         -         -425.016 *           Box-Cox Prameter         -         -425.016 *           Box-Cox Prameter         -         -25.016 *           Box-Cox Prameter         -         -8.236           Battery Type         -         -           Lithium-ion Battery          215.203 **           Shake Reduction         4.297 ***            Optical / Mechanical         4.297 ***            Weight          286.443 ***           over 300g          286.443 ***           Materproof         12.355 ***         120.234 **           Movie Mode         0.2866 ***         138.588 **           ISO Rating         6.220 ***            over 1600         6.920 ***            CCD Size          63.310 **           Dummy for Producer A         5.600 ***         52.677 **           Producer A         5.600 ***         52.677 **           Producer B         -4.547 ***         -120.690 ***           Producer C         33.813 *** </td <td>Optical Zoom (times)</td> <td>2.854</td> <td>292.807</td>	Optical Zoom (times)	2.854	292.807
Min. Pocal Length (Somm Equivalent)      0.004          Box-Cox Prameter       2.498         Macro Focus Distance (cm)        425.016         Batery Type        2.15.203         Lithium-ion Battery        215.203         Shake Reduction       4.297          Optical / Mechanical       4.297          Weight        286.443         over 300g        286.443         Waterproof       12.355       120.234         Movie Mode       0       6.920         over 1600       6.920          Cradle       7.118          Croalle       7.118          Over 1/1.8        63.310         Dummy for Producer       5.600       52.677         Producer B       -4.547       -120.660         Producer C       33.813       564.343         Producer B        -5.5948         Dummy for Period        -         2006/4Q       -11.597       -         2006/4Q       -28.014       -         2006/1Q       -29.755       -	Box-Cox Prameter	0.814	-0.510
Box-Cox Praneter         2.498           Macro Focus Distance (cm)         -         -425.016 $\cdot$ Battery Type         -         215.203 $^{\circ\circ\circ}$ Lithium-ion Battery         -         215.203 $^{\circ\circ\circ}$ Shake Reduction         4.297 $^{\circ\circ\circ}$ -           Weight         -         286.443 $^{\circ\circ\circ\circ}$ waterproof         12.355 $^{\circ\circ\circ}$ 120.234 $^{\circ\circ\circ}$ Movie Mode         -         286.443 $^{\circ\circ\circ\circ\circ}$ MPEG4         20.886 $^{\circ\circ\circ\circ}$ 138.588 $^{\circ\circ\circ\circ\circ}$ ISO Rating         6.920 $^{\circ$	Min. Focal Length (35mm Equivalent)	-0.004	
Match or Ocus Distance (cm)        -42.5.010         Box-Cox Prameter        -215.203         Battery Type        215.203         Lithium-ion Battery        215.203         Shake Reduction       4.297          Optical / Mechanical       4.297          weight        286.443          Movie Mode        286.443          Movie Mode        286.443          Movie Mode        286.443          Movie Mode         286.443          Movie Mode             Movie Mode              So Rating	Box-Cox Prameter	2.498	125.016 *
Box-Cox Praineer	Macro Focus Distance (cm)		-425.016
Battery         -         215.203 $^{}$ Shake Reduction         4.297         -         -           Weight         -         -         286.443 $^{}$ Waterproof         120.235         120.234 $^{}$ 286.443 $^{}$ Movie Mode         -         -         286.443 $^{}$ 286.443 $^{}$ Movie Mode         -         -         286.443 $^{}$ 286.443 $^{}$ Movie Mode         -         -         208.744         -         20.234 $^{}$ Movie Mode         -         -         63.310         -	Box-Cox Prameter		-8.230
Littmun-fon Battery $215.203$ Optical / Mechanical $4.297$ Weight $286.443$ Waterproof         12.355         120.234            Movie Mode         28.8443           286.443            Movie Mode         20.886          138.588  <	Battery Type		215 202 ***
Sinke Reduction $4.297$ Optical / Mechanical $286.443$ Weight $286.443$ Movie Mode         12.355          120.234            Movie Mode               MPEG4         20.886          138.588            So Rating               over 1600         6.920              CTalle         7.118               CDD Size           63.310             Over 1/1.8           63.310	Litnium-ion Battery		215.203
Optical / Mechanical $4.29^{-1}$ $-$ Weight          286.443            Waterproof         12.355          120.234            Movie Mode           286.443            Movie Mode           120.234            Movie Mode                Movie Mode                 over 1600	Snake Reduction	4 207 ***	
Weight over 300g          286.443         **           Waterproof         12.355         **         120.234         **           Movie Mode         20.886         138.588         *         120.234         **           MPEG4         20.886         **         120.234         **         *         -         -         63.510         **         -         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         63.310         **         -         -         56.60         **         120.690         **         -         -         55.600         **         120.690         **         120.690         **         -         55.948         **         2006/20         -         20.511         **         2006/20		4.297	
1 - 200,443           Materproof           Movie Mode           MPEG4           20.886           ISO Rating           over 1600           Cradle           7.118           Crobust           over 1600           0.920           Cradle           7.118           0ver 17.3           0ver 17.3           0ver 17.4           0ver 17.4           0ver 17.8           0.11.8           0.11.8           0.12.32.33.813           0.13.813           0.14.50           0.12.205/Q           0.12.206/Q           0.12.206/Q           0.12.206           0.12.206/Q           0.12.206/Q           0.12.206/Q	weight		796 112 ***
Waterproof         12.53         120.234           MPEG4         20.886         138.588         138.588           ISO Rating         6.920             Cradle         7.118          63.310            CCD Size          63.310          63.310            Dummy for Producer A         5.600          63.310            Producer A         5.600          63.310            Producer A         5.600          63.310            Producer A         5.600          63.310            Producer C         33.813          -55.948         ''           Dummy for Period           -55.948         ''           2005/4Q        1.27.86           -55.948         ''           2006/2Q         -1.597           -55.948         ''           2006/2Q         -1.597           -55.948         ''           2006/2Q         -1.8562	Over 300g		280.443
MMDE         20.886         138.588         "           ISO Rating over 1600 $6.920^{-11}$ Cradle $7.118^{-11}$ CCD Size over 1/1.8          63.310 "            Dummy for Producer A         5.600 "         52.677 "            Producer A         5.600 "         52.677 "            Producer B         -4.547 "             Producer C         33.813 "         564.343 "            Dummy for Period               2005/4Q         -4.120 "              2006/3Q                2006/3Q                2005/3Q                2005/2Q                2005/2Q                2005/2Q <t< td=""><td>Waterproof</td><td>12.555</td><td>120.234</td></t<>	Waterproof	12.555	120.234
Introduct         20.880         138.388           ISO Rating over 1600 $6.920^{-++}$ Cradle         7.118^{-++}            CCD Size over 17.8 $63.310^{-+}$ Dummy for Producer $63.310^{-+}$ Producer A         5.600^{-++} $52.677^{-+}$ Producer B         -4.547^{-++}         -120.690^{-++}           Producer C         33.813^{-++} $564.343^{-++}$ Producer D          -55.948^{-+}           Dummy for Period          -55.948^{-+}           2006/2Q         -11597^{-++}         -20.05/40^{-+}           2006/2Q         -11597^{-++}         -20.05/20^{-+}           2006/2Q         -11.597^{-++}         -20.05/20^{-+}           2006/2Q         -20.511^{-++}         -20.05/20^{-+}           2007/2Q         -28.014^{-++}         -20.05/20^{-+}           2005/2Q         -20.057.30^{-+}         -25.91.95^{-++}           2006/2Q         -25.91.95^{-++}         -20.05/20^{-+}           2006/2Q         -22.60.52^{-+}         -25.91.95^{-+}           2006/3Q         -338.311^{-++}         -318.151^{-++}           2006/3Q	MDEC4	20.886 ***	129 599 **
Iso Rating       6.920 ***          Over 1600 $6.920 ***$ Cradle       7.118 ***          CCD Size $63.310 **$ over 1/1.8 $63.310 **$ Dummy for Producer $63.310 **$ Producer A       5.600 *** $52.677 **$ Producer B $4.547 ***$ $-120.690 ***$ Producer D $-55.948 ***$ $-564.343 ****$ Dummy for Period $-55.948 ************************************$	ISO Pating	20.880	158.588
0011000         0.0320            Cradle         7.118            CCD Size          63.310           over 1/1.8          63.310           Dummy for Producer A         5.600         52.677           Producer B         -4.547         -120.690           Producer C         33.813         564.343           Producer D          -55.948           Dummy for Period          -55.948           2006/1Q         -11.597            2006/2Q         -11.597            2006/2Q         -28.014            2007/2Q         -28.014            2005/2Q         -114.011            2005/2Q         -259.195            2005/2Q         -259.195            2005/2Q         -259.195            2005/2Q         -259.195            2005/2Q         -226.052         -           2006/2Q         -338.341            2006/2Q         -338.341            2006/2Q         -338.341         -           2006/2Q	over 1600	6.020 ***	
Claude       7.118          CCD Size $63.310^{-10}$ Dummy for Producer       5.600 *** $52.677^{-10}$ Producer A $5.600^{-11}$ $52.677^{-10}$ Producer B       -4.547^{-120.690} *** $-120.690^{-110}$ Producer D $-55.948^{-10}$ Dummy for Period $-55.948^{-10}$ 2005/4Q       -4.120^{-11} $-55.948^{-10}$ 2006/1Q       -11.597^{-110} $-55.948^{-10}$ 2006/2Q       -11.597^{-110} $-20.511^{-11}$ 2006/3Q       -20.511^{-111} $-20.511^{-111}$ 2006/4Q       -28.014^{-114} $-20.511^{-111}$ 2005/2Q       -22.9.755^{-110} $-114.011^{-11}$ 2005/2Q       -22.0519^{-11} $-22.652^{-11}$ 2005/2Q       -22.652^{-11} $-22.652^{-11}$ 2006/3Q       -22.652^{-11} $-22.652^{-11}$ 2006/3Q       -338.341^{-11} $-318.151^{-11}$ 2006/4Q       0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720 <t< td=""><td>Cradle</td><td>7 118 ***</td><td></td></t<>	Cradle	7 118 ***	
over 1/1.8 $63.310$ **         Dummy for Producer       5.600 *** $52.677$ **         Producer B $4.547$ *** $-120.690$ ***         Producer C $33.813$ *** $564.343$ ***         Producer D $-55.948$ **         Dummy for Period $-12.786$ *** $2005/4Q$ $2005/4Q$ $-12.786$ *** $2006/3Q$ $2006/4Q$ $-20.511$ *** $2006/3Q$ $2006/4Q$ $-20.511$ *** $2007/2Q$ $2007/2Q$ $-28.014$ *** $2007/2Q$ $2005/4Q$ $-18.962$ *** $2007/2Q$ $2005/2Q$ $-29.755$ *** $-114.011$ *** $2005/2Q$ $-29.755$ *** $-114.011$ *** $2005/4Q$ $-318.151$ *** $-20.52.052$ *** $2006/1Q$ $-250.052$ *** $-226.052$ *** $2006/3Q$ $-338.341$ *** $-2006/3Q$ $-338.341$ *** $2006/4Q$ $0.763$ $0.790$ $-318.151$ ***         Adjusted R <sup>2</sup> $0.763$ $0.790$ $-318.151$ ***         Adjusted R <sup>2</sup> $0.763$ $0.790$ $-318.151$ ***         Mean of Depen	CCD Size	/.110	
Own for Producer         Sector           Producer A $5.600$ Producer B $-4.547$ Producer C $33.813$ Producer D $-$ Dummy for Period $-$ 2005/4Q $-4.120$ 2005/4Q $-4.120$ 2005/4Q $-4.120$ 2006/2Q $-11.597$ 2006/3Q $-20.511$ 2006/4Q $-18.962$ 2007/1Q $-28.014$ 2005/2Q $-114.011$ 2005/2Q $-29.755$ 2005/2Q $-29.755$ (Ref.) Dummy for Period (Previous estimation) $205/2Q$ $2005/2Q$ $-226.052$ $2006/2Q$ $-226.052$ $2006/2Q$ $-226.052$ $2006/2Q$ $-338.341$ $2006/2Q$ $-338.341$ $2006/4Q$ $-318.151$ $2006/4Q$ $-318.151$ $2006/4Q$ $-329.755$ $2006/4Q$ $-329.755$ $2006/4Q$ $-318.151$ $2006/4Q$ $-$	over $1/1.8$		63 310 **
Dummy for version $5.600$ $5.2.677$ Producer A $5.600$ $-120.690$ Producer C $33.813$ $-120.690$ Producer D $$ $-55.948$ Dummy for Period $-12.786$ $-55.948$ $2005/4Q$ $-112.786$ $-55.948$ $2006/2Q$ $-115.977$ $-55.948$ $2006/3Q$ $-20.511$ $-20.5211$ $2006/4Q$ $-28.014$ $-28.014$ $2005/2Q$ $-29.755$ $-7.5945$ (Ref.) Dummy for Period (Previous estimation) $-2005/3Q$ $-114.011$ $2005/4Q$ $-226.052$ $-226.052$ $2006/4Q$ $-226.052$ $-226.052$ $2006/3Q$ $-226.052$ $-226.052$ $2006/3Q$ $-226.052$ $-226.052$ $2006/4Q$ $-318.151$ $-318.151$ Adjusted R <sup>2</sup> $0.763$ $0.790$ Standard Error of Regression $8.194$ $259.975$ Mean of Dependent Variable $127.386$ $1344.720$	Dummy for Producer		03.510
Toducer B $-4.547$ $-120.690$	Producer A	5 600 ***	52 677 **
Instruction       Instruction         Producer C $33.813$ *** $564.343$ ***         Producer D $-55.948$ **         Dummy for Period       -4.120 ** $-55.948$ **         2006/1Q       -12.786 *** $-20.511$ ***         2006/2Q       -11.597 *** $-20.05/1$ 2006/3Q       -20.511 *** $-20.05/1$ 2006/4Q       -18.962 *** $-20.07/2$ 2007/1Q       -28.014 *** $-20.07/2$ 2005/2Q       -29.755 *** $-114.011$ ***         2005/2Q       -20.511       ***         2005/2Q       -29.755 *** $-114.011$ ***         2006/1Q       -259.195 *** $-226.052$ ***         2006/1Q       -259.195 *** $-226.052$ ***         2006/2Q       -226.052 *** $-226.052$ ***         2006/3Q       -338.341 *** $-318.151$ ***         2006/4Q       -318.151 *** $-338.341$ ***         2006/4Q       -318.151 *** $-318.151$ ***         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720 <td>Producer B</td> <td>-4 547 ***</td> <td>-120 690 ***</td>	Producer B	-4 547 ***	-120 690 ***
Producer D	Producer C	33.813 ***	564 343 ***
Produced D35.948Dummy for Period $-4.120$ **2006/1Q $-12.786$ ***2006/2Q $-11.597$ ***2006/3Q $-20.511$ ***2006/4Q $-18.962$ ***2007/1Q $-28.014$ ***2007/2Q $-29.755$ ***(Ref.) Dummy for Period (Previous estimation) $$ 2005/2Q $-114.011$ ***2006/1Q $-20.575$ ***(Ref.) Dummy for Period (Previous estimation) $$ 2005/2Q $-22.6052$ ***2006/1Q $-226.052$ ***2006/1Q $-226.052$ ***2006/2Q $-338.341$ ***2006/2Q $-338.341$ ***2006/3Q $-318.151$ ***Adjusted R <sup>2</sup> $0.763$ Mean of Dependent Variable $127.386$ 127.386 $1344.720$ Number of Observations $209$ 209195	Draducar D	55.015	55.049 **
Duffinity for Period       -4.120 **         2005/4Q       -12.786 ***         2006/2Q       -11.597 ***         2006/3Q       -20.511 ***         2006/4Q       -18.962 ***         2007/1Q       -28.014 ***         2007/2Q       -29.755 ***         (Ref.) Dummy for Period (Previous estimation)          2005/3Q       -114.011 ***         2005/4Q       -29.755 ***         (Ref.) Dummy for Period (Previous estimation)          2005/2Q       -20.519.195 ***         2006/1Q       -259.195 ***         2006/2Q       -226.052 ***         2006/2Q       -338.341 ***         2006/2Q       -338.341 ***         2006/4Q       -318.151 ***         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	Dummy for Pariod		-55.948
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		4 120 **	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2005/4Q	-4.120	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2006/10	-12.780	
2000/3Q       -18.962         2006/4Q       -18.962         2007/1Q       -28.014         2007/2Q       -29.755         (Ref.) Dummy for Period (Previous estimation)          2005/3Q       -114.011         2006/4Q       -147.946         2005/3Q       -147.946         2006/4Q       -259.195         2006/2Q       -226.052         2006/3Q       -338.341         2006/4Q       -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2006/20	-20 511 ***	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2006/3Q	18.062 ***	
2007/2Q       -29.755         (Ref.) Dummy for Period (Previous estimation)          2005/2Q       -114.011         2005/3Q       -147.946         2006/4Q       -29.755         2006/2Q       -259.195         2006/3Q       -226.052         2006/4Q       -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2007/10	-28 014 ***	
2007/12Q       201733         (Ref.) Dummy for Period (Previous estimation)          2005/2Q       -114.011         2005/4Q       -147.946         2006/1Q       -259.195         2006/2Q       -226.052         2006/3Q       -338.341         2006/4Q       0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2007/20	-29.755 ***	
2005/2Q $2005/3Q$ -114.011 $2005/4Q$ -147.946 $2006/1Q$ -259.195 $2006/2Q$ -226.052 $2006/3Q$ -338.341 $2006/4Q$ -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	(Ref.) Dummy for Period (Previous estimation)	29.135	
2005/3Q       -114.011         2005/4Q       -147.946         2006/1Q       -259.195         2006/2Q       -226.052         2006/3Q       -338.341         2006/4Q       -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2005/20		
2005/4Q       -147.946         2006/1Q       -259.195         2006/2Q       -226.052         2006/3Q       -338.341         2006/4Q       -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2005/30		-114 011 ***
2006/1Q       -259.195         2006/2Q       -226.052         2006/3Q       -338.341         2006/4Q       -318.151         Adjusted R <sup>2</sup> 0.763       0.790         Standard Error of Regression       8.194       259.975         Mean of Dependent Variable       127.386       1344.720         Number of Observations       209       195	2005/40		-147 946 ***
2006/2Q         -226.052           2006/3Q         -338.341           2006/4Q         -318.151           Adjusted R <sup>2</sup> 0.763         0.790           Standard Error of Regression         8.194         259.975           Mean of Dependent Variable         127.386         1344.720           Number of Observations         209         195	2006/10		-259.195 ***
2006/3Q         -338.341           2006/4Q         -318.151           Adjusted R <sup>2</sup> 0.763         0.790           Standard Error of Regression         8.194         259.975           Mean of Dependent Variable         127.386         1344.720           Number of Observations         209         195	2006/20		-226.052 ***
2006/4Q         -338.151           Adjusted R <sup>2</sup> 0.763         0.790           Standard Error of Regression         8.194         259.975           Mean of Dependent Variable         127.386         1344.720           Number of Observations         209         195	2006/30		-338 341 ***
Adjusted R20.7630.790Standard Error of Regression8.194259.975Mean of Dependent Variable127.3861344.720Number of Observations209195	2006/4Q		-318.151 ***
National R0.7000.790Standard Error of Regression8.194259.975Mean of Dependent Variable127.3861344.720Number of Observations209195	Adjusted $R^2$	0.763	0.790
Mean of Dependent Variable127.3861344.720Number of Observations209195	Standard Error of Regression	8 104	259 975
Number of Observations 209 195	Mean of Dependent Variable	127 386	1344 720
	Number of Observations	209	195

Notes:

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

2. The coefficients estimated above are White heteroscedasticity consistent estimator.