Reflection consumers' e-commerce change on the CPI

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I. Introduction

1. Although the Internet development enabled wholesalers to operate the Internet shopping malls, only a few persons began purchasing various goods through the Internet at the first stage. Recently, e-commerce is, however, the most popular purchasing way for both consumers and producers because faster broadband and cheaper computers increase the Internet users. Rapid development of information technology and secure system greatly expand e-commerce in Korea.

2. According to the E-commerce and cyber shopping survey, the transaction value amounted to 20,641 billion won in 2009, which rode by 93.3 percent from 2005 despite economic recession (see appendix 1).   The table 1 shows that 6 out of 10 Koreans use the internet shopping malls and female users are more likely to enjoy the Internet shopping.

< Table 1: Experience of Internet shopping >

	Internet Users	Experience of Internet shopping	No Experience of Internet shopping
Total	100.0	62.3	37.7
Male	100.0	55.6	44.4
Female	100.0	70.3	29.7

Sources: the Survey on the internet usage in 2009

3. To reflect this new purchasing trend, the Price Statistics Division (PSD), the Statistics Korea (KOSTAT) has collected the prices of goods in the Internet shopping malls and produced the CPI since 2005. The PSD selected 19 items for e-commerce; books, cosmetic products, and households' appliance.

4. The PSD has revised the Korean CPI every five years ending 0 or 5. To prepare 2010 revision, the PSD studies the transaction values by commodities and decides which items will be selected for e-commerce items in 2010 rebase.

II. Items for e-commerce

5. The PSD examines purchasing goods through the Internet shopping malls, popular shopping malls, and transaction values. To be selected as e-commerce items in the Korean CPI, the items should meet three criteria: 1) transaction percent, 2) survey availability, and 3) different price trend compared with that of off-line local stores.

6. The appendix 1 reveals transaction value by commodities and increase rate between 2005 and 2009.   First, the PSD chooses the some items which are representative in each commodity group.   For example, washing machine, cameras, refrigerators and vacuum cleaners are selected in the households' appliances group, while college textbooks and magazines in the book group.   But, the seasonal appliances like air conditioners, fans and stoves are excluded because their selling periods in the Internet shopping malls are shorter than in off-line stores.   To calculate the item index, the PSD collects the prices of the same products both the Internet shopping malls and 150 local off-line stores. Since the PSD hardly finds clothes with the same model numbers in both the Internet shopping malls and local stores, the clothes are also excluded.

7. Second, the PSD examines the survey availability. The product specifications in the CPI are described at a detailed level and each product has its own popular shopping malls. For example, books sell well in certain shopping malls, while households' appliances sell well in certain shopping malls. Because the selling package size changes the relative price of an item, the PSD also considers it. If the shopping mall changes often the item of selling package size or the PSD does not find the consistent and specific package size, the shopping malls are excluded.   Items of stationery, beverages and household accessories are excluded because of this reason. After collecting the prices for six months in various shopping malls, the PSD checks survey availability both items and shopping malls and decides which items are collected at certain shopping malls.

8. For the Korean CPI, the prices of a product are collected in 150 representative areas of 38 cities. If the prices of goods in the Internet shopping malls have the same price trends in 150 local off-line shops, the products are deleted as items for e-commerce. To choose e-commerce items, the PSD finally checks about t-test of the means between the Internet shopping malls and 150 local stores and also examines different standard deviations. According to these three criteria, the PSD chooses 43 preliminary items for 2010 revision as below the table 2.

< Table 2: Preliminary items of e-commerce for 2010 rebase>

Commodity group	Items
Households appliances	Refrigerator, vacuum cleaner, washing machine, blender, camera, etc.
Computer and other appliances	Computer, monitor, etc
Cosmetics	Lipstick, toner, facial power, sun block, etc
Musical instrument	Guitar
Books	Middle and high school text books, college text books, etc.

III. Index of e-commerce

9. After the staffs in the PSD in headquarter collect prices of an item in the Internet shopping malls, the PSD produces the item index by using two kinds of prices; prices of the Internet shopping malls and those of 150 local stores.   To calculate the item index, the PSD needs the weight of the prices for the Internet shopping malls.

10. The CPI weights for items are derived from the Households Income and Expenditure Survey (HIES) which is conducted monthly in 9,000 households by the KOSTAT. The regular results of the HIES could not provide information the goods are purchased by the off-line stores or the Internet shopping malls. Thus, the PSD will conduct ad hoc survey for the Internet shopping through the HIES to gather information.

11. To compute the weight for e-commerce items, the PSD utilizes the Wholesale and retail trade survey and the E-commerce and cyber shopping survey.   The transaction values of the E-commerce and cyber shopping survey divided by the trade values of the Wholesale and retail trade survey is the weight for an item in each group. All items in the same group have the same weight, namely, refrigerator and washing machines belonging to household's appliances have the same weight of 13.5 percent as below the table 3.

< Table 3: Transaction value and weight(2008)>

(Unit: billion won)

Commodity group	Value(A)	Value(B)	(B/A)*100
Households appliances	18,202	2,466	13.5
Books	5,989	1,137	19.0
Cosmetics	8,329	917	11.0

A is the Wholesale and retail trade survey and B is E-commerce and cyber shopping survey

12. The PSD weights the two relative prices to produce the item index.   If the relative price of the refrigerator in the Internet shopping malls is 120.5 and the relative price of it in 150 local stores is 130.4, the refrigerator index is finally 130.4(=120.5*0.135+130.4*0.875).

IV. Conclusion

13. In spite of economic recession, the sale of e-commerce increased in 2009.   Besides, the fact volumes of e-commerce greatly increased in the swine flu's rampant periods shows that consumers enjoy the convenience for the Internet shopping malls. Differently from infant period of the Internet shopping malls, consumers are much more satisfied with the quality of goods.

14. The PSD will finalize the items and weights for e-commerce in December 2010 after examining the ad hoc survey and the latest results of the Wholesale and retail trade survey and E-commerce and cyber shopping survey.

15. Since the item index of e-commerce is lower than that of local stores, including the prices of the Internet shopping malls drops increase rate in the CPI.   In 2005-base, e-commerce's impact is small because of a few items and weights. However, since numbers and weights of items increase in 2010 rebase, the e-commerce's impact on the CPI will be bigger.

< Appendix 1 > Transaction Value by Commodity

(Unit: billion won)

Commodity group	2005		2009ᵖ		Increase
	Value	percent	Value	percent	Rate
Total	10,676	100.0	20,641	100.0	93.3
Clothes and fashions related goods	1,583	14.8	3,524	17.1	122.6
Related service for travel	1,604	15.0	2,668	12.9	66.3
Households appliances	1,786	16.7	2,683	13.0	50.2
Household goods & accessories	1,056	9.9	1,959	9.5	85.5
Computer and other appliances	1,027	9.6	2,035	9.9	98.1
Goods for infants and children	406	3.8	1,247	6.0	207.1
Food and beverages	531	5.0	1,352	6.6	154.6
Cosmetics	587	5.5	1,104	5.3	88.1
Books	496	4.6	1,030	5.0	107.7
Sports and leisure appliances	396	3.7	844	4.1	113.1
Agricultural and fishery products	285	2.7	588	2.8	106.3
Office appliances and stationery	106	1.0	298	1.4	181.1
Software	98	0.9	130	0.6	32.7
Music CDs, & musical instrument	95	0.9	136	0.7	43.2
Miscellaneous services	70	0.7	72	0.3	2.9
Flowers	41	0.4	60	0.3	46.3
Others	509	4.8	912	4.4	79.2

Source: the new release of the e-commerce and cyber shopping survey in 2009