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Comparison of different sources for weights of selected groups in the Icelandic CPI: Consumers' bar-code cash receipts vs. scanner data from supermarkets

1. HBS data are in many cases the main source for new weights when revisions of the CPI are made. The use of data from the bar-code cash receipts collected in the 1995 Icelandic HBS offer new possibilities in this respect. One way to check the HBS information is to compare the results with information based on scanner data from supermarkets. That information was collected from one of the supermarkets for the year 1995. Information about the same expenditures for the year 1997 was also gathered. This information was aggregated covering about 400 groups and items for each year. The data involved expenditures on food, beverages, and some other groups altogether accounting for 19% of the total CPI weight. These items were classified according to the COICOP classification.
2. This information was then compared with the results available from the bar-code cash receipts from the 1995 HBS for the same supermarket chain. The results are found in table 1. The results from the HBS and the information from the supermarket for the year 1995 gave similar results. In two groups, tobacco and prepared food, the scanner data showed higher expenditure percentages than the HBS data set. As for tobacco and prepared food, there may be two explanations for this. Firstly, there is probably a tendency to underreport these items in the HBS and secondly, tobacco and prepared food may be included under the "no cash receipt" group. Another group, on the other hand, seems to be underreported in the supermarket data, milk, cheese and eggs. The amount in the HBS for this group is much higher than the supermarket information indicates. A closer study at the level of subindices indicates that this difference lies mainly in milk expenditures. This actually came as a surprise and there does not seem to be any special logical explanation for this.
3. The 1997 scanner data for expenditures at the supermarket were also collected so changes in sales could be mapped. To compare the 1997 results with the 1995 figures, the latter were adjusted to the average 1997 price levels by using the Icelandic HICP subindices. There seem

to be relatively small changes between 1995 and 1997 except for the group prepared food, which showed some increase in weight. This calls for further studies of changes in the consumption pattern of prepared food in this period. Information of this kind can be of great help when the CPI weights are revised.

4. In calculating the price change from the average of 1995 to the average of 1997 it makes no difference whether the supermarket or the HBS weights are used; exactly the same results are obtained.
5. The shares for each group in table 2 show that supermarkets have their biggest share of sales in oil and fats, fruit and vegetables, food products and coffee. In these groups the big supermarkets sell about 30% of their total sales. Their lowest coverage is in fish and tobacco as shopping for these goods takes place in smaller specialised shops.
6. The largest share of expenditure in table 3 is allocated to meat in supermarket 1 (18,1%) and to the group milk, cheese and eggs in supermarket 2 (18,2%). On the whole, expenditures on the four groups with the highest weights is 50-55% in all cases. The only expenditure item that is exceptionally high in the group "no receipts" is tobacco, with a share of 10%.
7. A look at the bar-code cash receipts in table 4 shows that information on approximately half of the amount recorded for food and non-alcoholic beverages came from cash receipts in the capital area and about 30% in other communities. Two supermarket chains dominate the market with a total market share of about 40-45% in the capital area. Even in the sparsely populated areas over 20% of the receipts collected came from these supermarkets in spite of the fact that their main operating centres are located in the capital area.
8. A comparison of the results from the Icelandic HBS with comparable scanner data from the biggest supermarket chain indicates that the utilization of scanner data can add to the reliability of the index. This scanner data seems to conform quite well with the HBS results. This information can increase the safe use of such data to revise CPI weights more often than otherwise would be the case and probably at lower cost. This result may entail changes in the scope and conduct of future HBS.

Table 1. Comparison of the 1995 HBS bar-code cash receipts and information from supermarket scanner data 1995 and 1997.

COICOP	Group	Price adjusted to 1997 average				
		Superm. 1995 %	HBS Superm. 1995 %	Superm. 1995 %	HBS Superm. 1995 %	Superm. 1997 %
01	Food and non-alcoholic beverages	83,5	85,4	83,7	85,7	82,4
011	Food	73,7	76,2	74,1	76,7	73,0
0111	Bread and cereals	12,2	12,6	12,4	12,8	12,2
0112	Meat	17,7	18,1	17,0	17,4	16,8
0113	Fish	3,6	3,4	3,4	3,2	3,6
0114	Milk, cheese and eggs	13,9	15,3	13,9	15,3	13,7
0115	Oils and fats	1,8	1,9	1,8	1,9	1,5
0116	Fruit	5,4	6,1	6,2	6,9	5,9
0117	Vegetables including potatoes	8,6	7,8	9,1	8,3	9,1
0118	Sugar, jam, chocolate etc.	6,4	6,2	6,2	6,1	6,1
0119	Food products n.e.c.	4,2	4,8	4,2	4,8	4,2
012	Non-alcoholic beverages	9,8	9,2	9,6	9,1	9,3
0121	Coffee, tea and cocoa	2,6	2,5	2,5	2,4	2,2
0122	Mineral waters, soft drinks and juices	7,2	6,8	7,1	6,7	7,1
0221	Tobacco	2,6	1,5	2,7	1,6	2,8
0561	Non-durable household goods	3,3	4,1	3,3	4,1	3,0
0611	Pharmaceutical products etc.(cod liver oil, vitamins)	0,9	1,0	0,9	0,9	1,0
1111	Restaurants and cafés (prepared food)	2,9	1,6	2,9	1,6	4,3
1212	Appliances, articles and products for personal care	6,7	6,4	6,5	6,2	6,5
	Total	100,0	100,0	100,0	100,0	100,0
	Price indices 1995=100			106,4	106,4	

Table 2. Bar-code cash receipts from the 1995 HBS
expenditure groups by source

COICOP	Group	Bar code cash receipts				Total %
		Superm. 1 %	Superm. 2 %	Other receipts %	No receipts %	
01	Food and non-alcoholic beverages	13	11	21	55	100
011	Food	13	11	21	55	100
0111	Bread and cereals	12	11	21	56	100
0112	Meat	13	9	20	57	100
0113	Fish	11	6	16	67	100
0114	Milk, cheese and eggs	13	13	22	52	100
0115	Oils and fats	13	16	24	47	100
0116	Fruit	18	10	23	49	100
0117	Vegetables including potatoes	17	12	24	47	100
0118	Sugar, jam, chocolate etc.	9	11	17	63	100
0119	Food products n.e.c.	17	12	27	44	100
012	Non-alcoholic beverages	11	11	19	59	100
0121	Coffee, tea and cocoa	12	16	24	48	100
0122	Mineral waters, soft drinks and juices	10	10	17	63	100
0221	Tobacco	3	0	12	85	100
0561	Non-durable household goods	11	10	20	59	100
0611	Pharmaceutical products etc.(cod liver oil, vitamins)	11	4	13	72	100
1111	Restaurants and cafés (prepared food)	10	7	13	70	100
1212	Appliances, articles and products for personal care	10	9	13	68	100
	Total	12	10	19	59	100

Table 3. Bar-code cash receipts from the 1995 HBS expenditure shares by groups and source

		Bar code cash receipts				
		Superm. 1	Superm. 2	Other receipts	No receipts.	Total
COICOP	Group	%	%	%	%	%
01	Food and non-alcoholic beverages	85,4	87,2	84,3	73,6	78,4
011	Food	76,2	75,9	74,7	63,6	68,4
0111	Bread and cereals	12,6	14,4	13,6	12,1	12,7
0112	Meat	18,1	14,5	16,6	15,3	15,8
0113	Fish	3,4	2,3	2,8	4,0	3,5
0114	Milk, cheese and eggs	15,3	18,2	16,1	12,3	14,0
0115	Oils and fats	1,9	2,8	2,2	1,4	1,7
0116	Fruit	6,1	4,0	4,8	3,3	4,0
0117	Vegetables including potatoes	7,8	6,9	6,7	4,4	5,5
0118	Sugar, jam, chocolate etc.	6,2	8,6	7,0	8,3	7,8
0119	Food products n.e.c.	4,8	4,1	4,8	2,5	3,4
012	Non-alcoholic beverages	9,2	11,3	9,6	10,0	9,9
0121	Coffee, tea and cocoa	2,5	3,7	2,9	1,9	2,4
0122	Mineral waters, soft drinks and juices	6,8	7,6	6,7	8,1	7,6
0221	Tobacco	1,5	0,0	4,5	10,0	7,0
0561	Non-durable household goods	4,1	4,2	4,3	4,3	4,3
0611	Pharmaceutical products etc.(cod liver oil, vitamins)	1,0	0,4	0,7	1,2	1,0
1111	Restaurants and cafés (prepared food)	1,6	1,5	1,3	2,3	2,0
1212	Appliances, articles and products for personal care	6,4	6,7	5,0	8,5	7,4
	Total	100,0	100,0	100,0	100,0	100,0

Table 4. Bar-code cash receipts information from the 1995 HBS expenditure shares by residence for group 01 food and non-alcoholic beverages

	Supermarket 1	Supermarket 2	Other receipts	No receipts	Total
	%	%	%	%	%
Capital area	18	16	15	51	100
Towns outside the capital area	5	3	33	59	100
Other communities	4	3	24	69	100
Total	13	11	21	55	100