

# **CHOICE OF PRICE INDEX FORMULAE AT THE MICRO-AGGREGATION LEVEL: THE CANADIAN EMPIRICAL EVIDENCE**

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The paper was initially presented at the first Meeting of the Ottawa Group on Price Indices, held in Ottawa, October 31 - November 2, 1994. This updated version includes price index series for some fresh produce and the results of quinquennial index linking, which were absent from the initial version. Also, Annex III is added with examples of series of actual price quotes. Finally, the updated version mentions that, from January 1995, geometric means started being used in the Canadian Consumer Price Index for the calculation of indices at the micro-aggregation level.

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## ABSTRACT

The problem of choosing a price index formula at the micro-aggregation level is discussed in the paper in the light of an empirical study that was carried out by the author in 1994. The study provides evidence that the choice of such formulae is of utmost importance to numerical results of indices. The proof is based on actual monthly price data for over 50 commodities, collected from December 1988 to January 1994 in the province of Ontario in the framework of the Consumer Price Index (CPI) survey. First, direct price indices were calculated on the preceding month time base, on the previous December time base, and on the December 1988 time base. They were derived from matched samples of prices using six formulae: ratios of equiweighted arithmetic, geometric and harmonic mean prices, as well as equiweighted arithmetic, geometric and harmonic means of price relatives. Next, chains of these indices were calculated on the December 1988 time base, alternatively with monthly, annual and quinquennial linking.

Differences in numerical results are stunning, in some cases they are tenfold and more. This means that the choice of micro-index formulae is a very important decision, likely more important than choosing a macro-index formula at higher aggregation levels. Another major conclusion from the study is that linking micro-indices, particularly frequent linking, greatly increases the effect of using alternative formulae. Consequently micro-index formulae should not be assessed solely according to their behaviour in direct price comparisons, but also, if not primarily, according to their comportment in chain price comparisons. Non-transitive formulae can play havoc with chain index numbers when relative prices tend to bounce.

Until 1994, micro-indices in the Canadian CPI have been calculated by monthly linking of the month-to-month ratios of arithmetic mean prices. As transitive formulae, the latter do not systematically bias the results, which was confirmed by the study. Nevertheless, a switch towards ratios of geometric mean prices was decided with the CPI basket update that took place in January 1995, to avoid problems with those categories of products that exhibit a broad spectrum of prices.

## 1. BACKGROUND

Most national statistical agencies describe their consumer price index (CPI) as a measure of consumer price change obtained by comparing, over time, the cost of a certain basket of commodities. There is an abundant literature with long tradition on the basket-defined index formulae and their derivatives, crossed and chain formulae. Modern index numbers theory elaborated criteria for assessing these formulae according to their affinity with the cost-of-living indices based on certain forms of the utility function.

In practice, however, the concept of basket-defined indices is not used thoroughly across all stages of the CPI computation. Indeed, it is usually not applied at the very first stage, when "*micro-indices*" for specific commodities are directly derived from a collection of individual price quotes. Different countries use a variety of techniques to calculate micro-indices, sometimes based on quite arbitrary decisions, or even on obscure historical precedents.

Until recently, there was not much written on the topic of micro-index formulae, probably considered not challenging enough from intellectual point of view, and not sufficiently important for results of index numbers. In the current decade, though, its importance became recognised by statistical agencies and authors, for example Balk [1991], Dalén [1992], Moulton [1993], Reinsdorf [1993], Reinsdorf and Moulton [1994], Sellwood [1987], Turvey [1989].

In the Canadian practice, it was at the beginning of the eighties when Prices Division encountered some anomalies in the calculation of micro-indices. The anomalies were diagnosed as a result of linking arithmetic means of price relatives. This led the author to a paper on chain price indices under the condition of "*bouncing*" relative prices [Szulc, 1983] and, later, to a more general paper explicitly addressing the problem of micro-index formulae [Szulc, 1987], where the use of geometric means was suggested. Both papers shared one weakness: absence of a realistic assessment of potential quantitative effects of using various micro-index formulae. Although the former paper contained numerical examples, the numbers were purposely made up to provide extreme results rather than taken from the CPI data. The only CPI index numbers available at that time for such comparisons were limited to a few commodities and to very short time intervals.

## 2. OUTLINES OF THE EMPIRICAL STUDY

The purpose of the study, carried out in the Central Research Section of Prices Division, was to assess the long-term effect of using alternative micro-index formulae under conditions similar to those of the Canadian CPI production. Starting with the current CPI methodology and actual price data, different formulae and linking frequencies have been tested. The study became feasible thanks to a new CPI computerised system, which stores all collected price quotes and allows their retrieval for further processing.

In the Canadian CPI, micro-indices for designated commodities are calculated within spatial strata. The study used as primary inputs the price data for over 50 commodities, collected from December 1988 to January 1994 in the province of Ontario (taken as one spatial stratum). Prices collected less than once a month were carried over until the next price collection. Seasonal commodities were excluded. The number of monthly price figures used in the study ranged from 40 to 120 per commodity.

Six micro-index formulae have been taken into consideration in the study, of which three are ratios of mean prices collected in the base and observation times:

- a ratio of equiweighted arithmetic mean prices (**RAMP**),
- a ratio of equiweighted geometric mean prices (**RGMP**), and
- a ratio of equiweighted harmonic mean prices (**RHMP**).

Three other formulae are means of price relatives (expressing price change from the base to observation times for individual items):

- an equiweighted arithmetic mean of price relatives (**AMPR**),
- an equiweighted geometric mean of price relatives (**GMPR**), and
- an equiweighted harmonic mean of price relatives (**HMPR**).

The ratio of arithmetic mean prices was used in the Canadian CPI until 1994 as the main micro-index formula to estimate month-to-month price change for any given commodity within a given spatial stratum. To measure "*pure price change*", each ratio was calculated taking into account only prices from "*bilaterally matched samples*", i.e., only prices that have been collected during two consecutive months in the same outlet and that relate to the same item (unless adjusted for quality differences). Longer-term estimates of price change are obtained indirectly, through linking of these direct month-to-month micro-indices.

The study simulated the calculation of **direct month-to-month micro-indices derived from bilaterally matched samples** (using all six formulae) and their **monthly linking**. Matching was automatic in the case of means of price relatives, but required explicit exclusion of some collected price data when ratios of mean prices were used. The study also simulated the calculation of **direct micro-indices on the last December time base** and their **annual linking** (in December), an approach used by several countries. Finally, **direct micro-indices on the December 1988 time base** were calculated for the months from January 1989 to December 1993, and the direct indices for January 1994 on the December 1993 time base were linked to the latest of them in December 1993. This simulates a **quinquennial linking**, an approach used in the U.S.A by the Bureau of Labor Statistics.

With annual linking, bilateral matching of samples affects prices in all months of a given year and those in the last December, but not prices in all pairs of consecutive months, as in the case of monthly linking. With a single December 1993 linking, matching affects only prices in January 1994 and those in December 1988. For this reason, the results of monthly, annual and of quinquennial linking diverge not only because of a different frequency of linking, but also because of **differences in the effective price data base retained after the elimination of unmatched outlets and items**.

Annex I contains examples of tables 1a, 2a, and 3a with complete sets of chain index numbers obtained by linking various direct indices, from the time base of December 1988 until January 1994. These tables also include the corresponding sets of direct index numbers derived using the six micro-index formulae. Only series for a few selected commodities are presented, series for other commodities are available on request. Annex II shows the formulae that have been used for the calculation of the direct and chain price indices obtained from bilaterally matched samples.

To estimate the effect of changes in the linking frequency unhampered by differences in the matching procedure, yet another version of the study analysed micro-indices that, for every commodity, were derived from the same sample of outlets and items through all months from December 1989 to January 1994. This **common sample** excluded every outlet that have been absent from any monthly survey during the entire five year period, hence it is generally much smaller than the bilaterally matched samples for the same commodity. As with the bilaterally matched samples, all six micro-index formulae were used with the three types of linking. Tables 1b, 2b, and 3b of Annex I present the resulting direct and chain index numbers for the selected commodities. Formulae in Annex II relate to the indices obtained from common samples, as well.

### 3. NUMERICAL RESULTS OF THE STUDY

The following Summary Table A is an extract of the Tables 1a, 1b, and 1c for 24 commodities, which are shown in Annex I in their complete version for three commodities. It contains chain indices for January 1994 on the December 1988 time base. The five-year period 1989-1993 is sufficiently long to prove that the cumulative effect of using alternative micro-index formulae can be striking even under realistic conditions of the CPI production. In fact, differences between some index numbers are of the same order of magnitude as in the artificial examples made up by the author for his 1983 paper to shock the reader.

Summary Table A

**INDICES FOR JANUARY 1994 ON THE DECEMBER 1988 TIME BASE  
OBTAINED THROUGH LINKING OF DIRECT MICRO-INDICES  
CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

	Micro - indices calculated as					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
	<b>Bananas</b>					
Linking every month	123.5	124.2	124.1	1837.7	124.2	8.3
Linking once a year	123.0	123.5	123.5	166.3	123.5	90.5
Linking once every five years	122.8	123.5	123.5	136.1	123.5	109.9

	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
<b>Potatoes</b>						
Linking every month	111.7	110.2	108.3	1234.9	110.2	10.2
Linking once a year	114.8	114.8	114.9	150.8	114.8	86.3
Linking once every five years	111.9	110.9	109.7	116.1	110.9	105.3
<b>Tomatoes</b>						
Linking every month	159.5	160.9	162.5	1696.3	160.9	15.1
Linking once a year	167.2	169.8	173.6	225.0	169.8	128.3
Linking once every five years	160.2	160.3	160.4	181.0	160.3	141.2
<b>Soft Drinks</b>						
Linking every month	115.0	117.5	119.0	925.7	117.5	15.1
Linking once a year	113.6	116.1	117.7	146.6	116.1	88.7
Linking once every five years	114.5	117.0	118.6	122.9	117.0	110.1
<b>Apples</b>						
Linking every month	123.1	122.1	120.9	335.0	122.1	44.0
Linking once a year	122.6	122.0	121.5	138.6	122.0	107.4
Linking once every five years	123.1	122.1	121.0	126.1	122.1	118.0
<b>Chicken</b>						
Linking every month	119.7	121.2	123.0	266.7	121.2	54.2
Linking once a year	119.2	120.3	121.7	134.5	120.3	106.8
Linking once every five years	118.9	119.8	121.1	123.1	119.8	116.5
<b>Potato Chips</b>						
Linking every month	87.2	85.1	83.4	245.2	85.1	29.1
Linking once a year	86.5	84.3	82.6	101.0	84.3	70.4
Linking once every five years	88.2	85.9	84.1	90.5	85.9	81.5
<b>Cookies</b>						
Linking every month	115.5	116.7	118.0	214.2	116.7	63.1
Linking once a year	113.5	114.7	116.0	125.5	114.7	104.3
Linking once every five years	115.3	116.8	118.4	121.6	116.8	111.9
<b>Sugar</b>						
Linking every month	109.2	111.6	114.1	203.8	111.6	60.3
Linking once a year	108.6	110.8	113.4	123.7	110.8	98.2
Linking once every five years	107.7	110.2	113.1	114.7	110.2	105.9
<b>Ground Beef</b>						
Linking every month	113.7	113.2	112.8	192.8	113.2	66.2
Linking once a year	113.8	113.0	112.0	120.7	113.0	105.6
Linking once every five years	113.7	112.8	111.6	114.8	112.8	110.7
<b>Dinnerware</b>						
Linking every month	95.4	100.6	104.7	149.9	100.6	66.3
Linking once a year	102.4	105.2	107.2	123.0	105.2	89.2
Linking once every five years	98.0	102.5	105.6	109.5	102.5	95.6
<b>Women's Shoes</b>						
Linking every month	107.7	105.8	105.0	144.7	105.8	77.4
Linking once a year	107.2	105.6	105.4	117.1	105.6	94.8
Linking once every five years	109.2	107.0	106.4	111.9	107.0	102.9
<b>Sofas</b>						
Linking every month	84.7	85.8	87.6	121.5	85.8	62.2
Linking once a year	87.7	86.0	86.1	102.2	86.0	73.1
Linking once every five years	84.2	83.7	83.8	87.6	83.7	80.5
<b>Eggs</b>						
Linking every month	106.3	107.1	108.0	133.1	107.1	86.1
Linking once a year	105.8	106.6	107.4	111.5	106.6	101.5
Linking once every five years	105.9	106.5	107.2	107.5	106.5	105.5

	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
<b>Hotels</b>						
Linking every month	83.5	82.9	81.6	102.2	82.9	66.7
Linking once a year	87.1	87.0	86.3	95.3	87.0	79.0
Linking once every five years	90.6	91.7	93.2	95.5	91.7	88.1
<b>Television Sets</b>						
Linking every month	82.5	82.9	83.2	101.6	82.9	68.3
Linking once a year	84.9	85.8	86.4	97.7	85.8	76.0
Linking once every five years	84.9	84.8	84.4	87.7	84.8	82.1
<b>Butter</b>						
Linking every month	106.7	106.6	106.7	123.4	106.6	92.1
Linking once a year	106.5	106.5	106.6	110.4	106.5	102.4
Linking once every five years	105.8	105.7	105.7	107.4	105.7	104.0
<b>Games</b>						
Linking every month	132.4	131.9	131.4	144.1	131.9	121.2
Linking once a year	131.6	131.1	130.7	139.4	131.1	123.8
Linking once every five years	130.9	129.8	128.8	132.5	129.8	127.3
<b>Electric Ranges</b>						
Linking every month	86.8	86.6	86.4	97.8	86.6	76.4
Linking once a year	86.9	86.6	86.4	91.9	86.6	81.5
Linking once every five years	84.9	85.1	85.4	87.8	85.1	82.6
<b>Milk</b>						
Linking every month	114.1	114.2	114.2	124.8	114.2	104.2
Linking once a year	113.3	113.4	113.4	117.0	113.4	109.7
Linking once every five years	112.8	113.0	113.1	114.0	113.0	111.9
<b>Refrigerators</b>						
Linking every month	91.2	90.8	90.4	101.7	90.8	81.2
Linking once a year	90.5	90.0	89.6	93.9	90.0	86.3
Linking once every five years	90.9	90.8	90.7	91.8	90.8	89.8
<b>Men's Haircut</b>						
Linking every month	127.0	126.0	125.3	128.9	126.0	123.3
Linking once a year	125.0	124.9	124.8	126.3	124.9	123.5
Linking once every five years	126.9	127.1	127.3	127.6	127.1	126.6
<b>Lunches</b>						
Linking every month	114.7	115.0	115.2	117.4	115.0	112.5
Linking once a year	114.6	114.8	115.1	116.8	114.8	112.8
Linking once every five years	115.7	115.8	116.0	116.9	115.8	114.7
<b>Women's Hairdressing</b>						
Linking every month	120.1	120.5	120.8	122.7	120.5	118.5
Linking once a year	120.2	120.6	121.0	121.8	120.6	119.4
Linking once every five years	120.2	120.5	120.8	121.3	120.5	119.7

There are relatively small differences between index numbers derived from micro-indices calculated as ratios of arithmetic, geometric and harmonic mean prices. No clear pattern appears with respect to the sign of these differences. For some commodities the highest index numbers were obtained with ratios of arithmetic mean prices (e.g., for potato chips, women's shoes), for some with harmonic means prices (e.g., for chicken, sofas), while index numbers obtained with ratios of geometric mean prices fell between these two. The uncertainty takes place even though the sign of differences between arithmetic, geometric and harmonic mean prices derived from the same sample is very predictable: an arithmetic mean price is never lower than the corresponding geometric mean price and the latter never lower than the corresponding harmonic mean price. However, because this relationship occurs at both the observation and base times, the differences between, say, a ratio of arithmetic mean prices and a ratio of harmonic mean prices can be positive or negative, depending on the case.

Differences between index numbers derived from micro-indices calculated as arithmetic, geometric and harmonic means of price relatives are much larger than the previously mentioned differences between micro-indices derived from ratios of arithmetic, geometric and harmonic mean prices. Signs of these differences are certain: an arithmetic mean of price relatives is never lower than their harmonic mean, while a geometric mean lies between the two. It can be seen that the amplitude of the differences grows with the frequency of linking and becomes astoundingly high in some cases of monthly linking. In the case of soft drinks, for example, the difference between the chain index numbers obtained by **monthly linking of arithmetic and harmonic means of price relatives cumulates to more than 900 index points over five years. It cumulates to more than 50 index points with annual linking and is still over ten index points with quinquennial linking.** The differences are even larger for some of the fresh produce.

A geometric mean of price relatives is always equal to the ratio of geometric mean prices derived from the same sample. It follows that the index numbers obtained using these two micro-index formulae are also always equal to each other. This is not the case with arithmetic or harmonic means. As anticipated by Szulc [1987], direct micro-index numbers derived using arithmetic (harmonic) means of price relatives tend to be higher (lower) than those obtained, respectively, from ratios of arithmetic (harmonic) mean prices. Linking, especially monthly linking, enhances these differences. Taking again soft drinks as example, the chain index number obtained through **monthly linking of arithmetic means of price relatives became almost eight times higher than the corresponding chain of ratios of arithmetic mean prices. It is more than 25% higher with annual linking, and still 5% higher with quinquennial linking.**

Linking of micro-indices affects the amplitude of all the discrepancies when non-transitive micro-index formulae are used for a set of commodities that exhibit "*bouncing relative prices*". This is shown in the Summary Table A, which ranks commodities by the amplitude of these differences. Many commodities that appear at the top of the Table, such as soft drinks, ground beef, chicken, or sugar, belong to typical "*loosing leaders*" on the Canadian retail market. To attract customers, they are frequently offered at very low prices, which then tend to rebound after a short period of time. For example, during the same three consecutive price surveys carried out in Toronto, a bottle of Coca Cola was sold in one outlet for \$0.49, \$0.99, and \$0.25, while in another one for \$0.99, \$0.49 and \$0.99, respectively. Annex III shows more examples of the kind.

Commodities at the bottom of the Summary Table A are much less subject to the yo-yo price behaviour. This explains why the use of various micro-index formulae only moderately affects their long-term index numbers. Lunches and hairdressing are good examples of these commodities.

The Summary Table A also exhibits some unexpected behaviour of index numbers obtained using transitive micro-index formulae. One would anticipate that transitive formulae, such as ratios of mean prices or geometric means of price relatives, will give the same index number whatever the frequency of linking (or with no linking at all). In the study, linking once a month



provided somewhat different index numbers than linking once a year. Taking as example ratios of arithmetic mean prices for soft drinks, the January 1994 index number of 115.0, obtained through monthly linking, is higher than the index number of 113.6 obtained through annual linking. The paradox is only spurious. The divergence is not caused by varying frequency of linking, but by the procedure of matching which creates different effective samples for month-to-month micro-indices (with monthly linking and monthly matching of samples), and for micro-indices on the last December time base (with annual linking and annual matching of samples).

When there is no change in the samples, index numbers are the same, as shown in the following Summary Table B, which is an extract of the Tables 2a, 2b, and 2c from Annex I. In contrast to Table A, all micro-indices used to produce Table B, whether their time base is the preceding month, the last December, or December 1988, were derived from a common sample of outlets and items for a given commodity. As a result, the January 1994 index numbers for soft drinks derived through monthly, annual or quinquennial linking of arithmetic mean prices are identical, at 115.0. The index numbers from Table B, however, may be somewhat less reliable than those from Table A, because common samples are generally smaller than those that are bilaterally matched for the same commodities.

### Summary Table B

#### INDICES FOR JANUARY 1994 ON THE DECEMBER 1988 TIME BASE OBTAINED THROUGH LINKING OF DIRECT MICRO-INDICES CALCULATED USING PRICES FROM A COMMON SAMPLE

	Micro - indices calculated as					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
<b>Bananas</b>						
Linking every month	121.1	121.4	121.1	1599.7	121.4	9.1
Linking once a year	121.1	121.4	121.1	162.6	121.4	89.3
Linking once every five years	121.1	121.4	121.1	133.6	121.4	108.1
<b>Potatoes</b>						
Linking every month	113.7	113.3	112.8	1351.8	113.3	10.0
Linking once a year	113.7	113.3	112.8	147.8	113.3	86.0
Linking once every five years	113.7	113.3	112.8	118.2	113.3	108.2
<b>Tomatoes</b>						
Linking every month	160.9	160.2	159.2	1529.4	160.2	16.6
Linking once a year	160.9	160.2	159.2	209.1	160.2	122.9
Linking once every five years	160.9	160.2	159.2	171.4	160.2	147.6
<b>Soft Drinks</b>						
Linking every month	114.4	117.0	118.7	888.8	117.0	15.6
Linking once a year	114.4	117.0	118.7	145.0	117.0	91.2
Linking once every five years	114.4	117.0	118.7	123.1	117.0	110.1
<b>Apples</b>						
Linking every month	123.5	122.4	121.3	332.0	122.4	44.6
Linking once a year	123.5	122.4	121.3	138.2	122.4	108.5
Linking once every five years	123.5	122.4	121.3	126.0	122.4	118.8

	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
<b>Chicken</b>						
Linking every month	118.8	119.5	120.5	266.0	119.5	52.8
Linking once a year	118.8	119.5	120.5	133.2	119.5	106.5
Linking once every five years	118.8	119.5	120.4	122.9	119.5	116.0
<b>Potato Chips</b>						
Linking every month	88.7	86.4	84.5	248.8	86.4	29.6
Linking once a year	88.7	86.4	84.5	103.3	86.4	72.6
Linking once every five years	88.7	86.4	84.5	90.9	86.4	82.1
<b>Cookies</b>						
Linking every month	116.0	117.9	120.4	222.9	117.9	61.9
Linking once a year	116.0	117.9	120.4	129.0	117.9	107.3
Linking once every five years	116.0	117.9	120.4	122.6	117.9	113.3
<b>Sugar</b>						
Linking every month	107.3	109.6	112.3	198.6	109.6	59.6
Linking once a year	107.3	109.6	112.3	123.2	109.6	96.5
Linking once every five years	107.3	109.6	112.3	113.9	109.6	105.5
<b>Ground Beef</b>						
Linking every month	114.2	113.8	113.3	191.8	113.8	67.0
Linking once a year	114.2	113.8	113.3	121.4	113.8	106.5
Linking once every five years	114.3	113.8	113.4	115.7	113.8	111.9
<b>Dinnerware</b>						
Linking every month	98.0	102.5	105.6	155.1	102.5	66.7
Linking once a year	98.0	102.5	105.6	120.3	102.5	86.3
Linking once every five years	98.0	102.5	105.6	109.5	102.5	95.6
<b>Women's Shoes</b>						
Linking every month	108.0	106.5	106.6	147.5	106.5	76.6
Linking once a year	108.0	106.5	106.6	118.4	106.5	95.2
Linking once every five years	108.0	106.5	106.6	111.1	106.5	102.6
<b>Eggs</b>						
Linking every month	105.8	106.5	107.2	134.2	106.5	84.3
Linking once a year	105.8	106.5	107.2	111.7	106.5	101.1
Linking once every five years	105.8	106.5	107.2	107.5	106.5	105.5
<b>Hotels</b>						
Linking every month	90.6	91.7	93.1	116.2	91.7	71.6
Linking once a year	90.6	91.7	93.1	99.4	91.7	84.3
Linking once every five years	90.6	91.7	93.2	95.5	91.7	88.1
<b>Sofas</b>						
Linking every month	84.4	83.9	84.0	106.6	83.9	66.2
Linking once a year	84.4	83.9	84.0	90.9	83.9	77.7
Linking once every five years	84.4	83.9	84.0	88.1	83.9	80.6
<b>Television Sets</b>						
Linking every month	88.6	87.5	86.8	111.1	87.5	70.4
Linking once a year	88.6	87.5	86.8	102.2	87.5	74.4
Linking once every five years	88.6	87.5	86.8	90.2	87.5	85.2
<b>Butter</b>						
Linking every month	105.9	105.7	105.8	123.8	105.7	90.3
Linking once a year	105.9	105.7	105.8	109.9	105.7	101.4
Linking once every five years	105.8	105.7	105.8	107.5	105.7	104.0
<b>Games</b>						
Linking every month	132.7	131.7	130.8	146.3	131.7	119.2
Linking once a year	132.7	131.7	130.8	140.7	131.7	123.6
Linking once every five years	132.7	131.7	130.8	134.6	131.7	128.9
<b>Milk</b>						
Linking every month	113.1	113.2	113.3	124.3	113.2	102.8
Linking once a year	113.1	113.2	113.3	117.0	113.2	109.4
Linking once every five years	113.1	113.2	113.3	114.2	113.2	112.2

	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
<b>Refrigerators</b>						
Linking every month	90.9	90.8	90.7	101.8	90.8	81.1
Linking once a year	90.9	90.8	90.7	93.9	90.8	87.8
Linking once every five years	90.9	90.8	90.7	91.8	90.8	89.8
<b>Electric Ranges</b>						
Linking every month	84.9	85.1	85.4	95.6	85.1	75.8
Linking once a year	84.9	85.1	85.4	90.1	85.1	80.4
Linking once every five years	84.9	85.1	85.4	87.8	85.1	82.5
<b>Men's Haircut</b>						
Linking every month	126.9	127.1	127.3	130.0	127.1	124.2
Linking once a year	126.9	127.1	127.3	128.4	127.1	125.8
Linking once every five years	126.9	127.1	127.3	127.6	127.1	126.6
<b>Lunches</b>						
Linking every month	115.7	115.8	116.0	118.3	115.8	113.3
Linking once a year	115.7	115.8	116.0	117.7	115.8	113.9
Linking once every five years	115.7	115.8	116.0	116.9	115.8	114.7
<b>Women's Hairdressing</b>						
Linking every month	120.2	120.5	120.8	122.6	120.5	118.5
Linking once a year	120.2	120.5	120.8	121.7	120.5	119.2
Linking once every five years	120.2	120.5	120.8	121.3	120.5	119.7

#### 4. THE CHOICE OF MICRO-INDEX FORMULAE : MAIN ISSUES

This empirical study contributed to the debate on micro-indices in Prices Division, Statistics Canada. It is not that its findings are revolutionary, most of them have been brought up and discussed in the Division for almost two decades. Numerical evidence, however, has sometimes more convincing power than theoretical arguments.

The main conclusion is that the choice of micro-index formulae is a very serious business, with strong potential consequences on the resulting index numbers. In most practical cases, choosing a micro-index formula is likely to be more important than choosing a given basket-defined or another macro-index formula for higher aggregation levels. A comparison between the range of numerical results obtained in the present study and the range of results obtained by applying various macro-index formulae to the Canadian CPI (see Génèreux [1983]) is quite indicative of that proposition.

The proposition seems to be particularly valid when short- and medium-term price changes are estimated (say, changes over a period of five years or less), whose knowledge is essential to many practical CPI applications, like monitoring inflation or finding escalators to compensate for the lost purchasing power of nominal incomes. Over these periods of time, the question whether the CPI should be, for example, of the Laspeyres or the Paasche form, is not vital. Indeed, it is only over longer periods of time, under the effect of changing macro-economic and macro-social conditions, that the population's spending patterns exhibit tangible changes, which warrant searching for a relevant basket-defined price index formula. Over short- and medium-term periods, manifold and often chaotic fluctuations on the retail market influence the CPI more than changes in the spending patterns, and they affect the CPI through its micro-indices.

Another major conclusion from the empirical study is that linking of micro-indices, particularly frequent linking, greatly increases the effect of using alternative formulae. This means that the micro-index formulae should not be assessed solely according to their behaviour in direct price comparisons, but also, if not primarily, according to their comportment in chain price comparisons. Therefore, the criteria of selecting micro-index formulae that are deduced, implicitly or explicitly, from direct price comparisons, should be used with caution, and never without considering the problem of transitivity. Concordance with the distribution of prices or price relatives might be quoted as one of those criteria, similarity to a specific form of indices of the basket-defined index family, as another one.

Since linking of micro-indices appears to be the main cause of their *misbehaviour*, the question might be asked why not to avoid linking as much as possible. In reality, the occurrence of micro-index linking cannot be eliminated altogether. Some replacements of outlets and priced items have to take place, and this means index linking, whether it is called by its name or not. Without the replacements, samples would soon become very thin, if kept matched, or, if no matching was performed, they would lose their capacity to estimate pure price change.

A less radical action would be to reduce the frequency of linking. The Canadian CPI practice of deriving direct month-to-month indices and of their subsequent monthly linking seems to be particularly inadequate in this respect. Yet, this practice has a big advantage: it enhances flexibility in the selection of items whose prices are collected and of outlets where the prices are collected, while maintaining the rule of matched samples. In this case, the bilateral matching affects only two consecutive monthly samples, whereas outlets and items can be updated for the next month-to-month price comparison, which enhances the relevancy of index numbers to the current market reality. This practice, however, makes the problem of transitivity of micro-indices even so more crucial.

Non-transitive formulae can play havoc with chain index numbers when relative prices tend to bounce, which is typical not only of the commodities with price seasonality, but also of those subject to short-term special pricing strategy. One could eliminate a lot of trouble if these special prices were ignored in price surveys. However, this is not a very valid recommendation. Price collectors would have to take many arbitrary decisions whether the displayed price reduction is temporary, and would not always get much help in this matter from shop managers, either because they do not want to answer the question or do not know the answer. In addition, when an item is actually sold at reduced prices, whether temporarily or not, this should be recognised as a price drop. There might even be some longer-term effect on the cost of living, if the frequency of special pricing varies through time, which may occur with business cycles or local competition wars.

If one accepts that the capacity of an ongoing substitution of surveyed outlets and items is a desirable feature of the CPI methodology, and if one rejects the idea of ignoring special prices, a transitive micro-index formula remains the only sensible choice. The formula used in the Canadian CPI until 1994, namely monthly linking of month-to-month ratios of arithmetic mean prices belongs to this category. The empirical study confirmed that this approach does not lead to

any systematic bias of the resulting index numbers. Despite that, a switch towards ratios of geometric mean prices was decided with the most recent CPI basket update, which took place in January 1995. This is because, in contrast with ratios of geometric mean prices, the ratios of arithmetic mean prices tend to give a higher influence on the estimate of price change to more expensive items, by the way of their implicit weighting. The danger could be reduced, or altogether eliminated, if averaging was done within commodity groups that are homogeneous from the point of view of price levels, or if sampling was random. Neither is the case in the Canadian CPI practice. The proposition of creating commodity groups homogeneous from the viewpoint of price levels (not price change!) is unworkable, while true random sampling of items whose prices are collected remains a very remote proposition, at best.

Another nicety of micro-indices calculated using geometric means is the possibility of their double interpretation. A ratio of equiweighted geometric mean prices is equal to an equiweighted geometric mean of price relatives. Both interpretations have some merit. A mean of price relatives corresponds to the idea of estimating price change, while ratio of mean prices conveys the idea of transitivity.

The Canadian approach to the micro-index problem is pragmatic, and based on statistical rather than economic considerations. There are other schools of thinking, though, that suggest the use of the same conceptual framework to define micro-indices as that used to define the macro-index structure of the CPI. One may quote here the Swedish approach, in which the estimation of micro-indices approximates the Edgeworth formula (Dalén [1992]), and the approach suggested by Balk [1991], to approximate the Laspeyres formula. Both these formulae belong to a family of basket-defined indices.

The idea of a consistent approach to the CPI construction at all aggregation levels is certainly interesting and appealing. Yet, the question remains whether enforcing the basket approach, or an akin concept, upon micro-indices is worth the effort and, indeed, desirable. Retail transactions, as identified at the lowest level of detail (that means not only with the variety and brand of the purchased item, but also with the name of the outlet, as well as with conditions and time of the purchase) resemble, by their volatility, the Brownian movements. If the analogy holds, they should be described by statistical observation, rather than by any preconceived model of behaviour. This is in contrast with broader categories of consumer goods and services, whose purchases exhibit certain constancy due to lasting macro-economic and macro-social forces, therefore justifying the concept of baskets. The discussion on micro-index formulae cannot be completed without taking into account other related topics, particularly the sample design. There is a relationship between the way items are sampled and the need of sample matching, which may influence the choice of micro-index formulae. Also the extent of stratification in the sampling procedure may affect the choice of these formulae. In fact, this is a two-way relationship. The choice of micro-index formulae, itself, may favour a more or less detailed stratification for the purpose of sampling of items. Prices Division recognises these relationships and intends to pursue discussions in a broader context when sample redesign will be on the table.

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# **ANNEX I**

## **DIRECT AND CHAIN PRICE MICRO-INDICES FOR SOFT DRINKS, WOMEN'S SHOES, AND MILK IN THE PROVINCE OF ONTARIO, FROM JANUARY 1989 TO JANUARY 1994**

**Their formulae are shown in the Annex II**

Similar data for other commodities are available on request.

**Each table in Annex I relates to one commodity and contains:**

- ❖ series of **direct micro-indices on various time bases**, calculated using the following six index formulae:
  - **RAMP** - ratios of equiweighted arithmetic mean prices,
  - **RGMP** - ratios of equiweighted geometric mean prices,
  - **RHMP** - ratios of equiweighted harmonic mean prices,
  - **AMPR** – equiweighted arithmetic means of price relatives,
  - **GMPR** – equiweighted geometric means of price relatives, and
  - **HMPR** – equiweighted harmonic means of price relatives,as well as
- ❖ series of **chain micro-indices on the December 1988 time base**, obtained by linking these direct micro-indices.

**Tables 1a and 2a** contain series of direct **month-to-month indices** as well as series of chain indices obtained by their **monthly linking** (with links in every month from January 1989 to December 1993).

**Tables 1b and 2b** contain series of direct indices **on the last December time base** as well as series of chain indices obtained by their **yearly linking** (with links in every December, from 1989 to 1993).

**Tables 1c and 2c** contain series of direct indices **on the December 1988 time base** (up to December 1993) and direct indices on the December 1993 time base (for January 1994 only); as well as chain indices obtained by **quinquennial linking** (in fact only one link was used, in December 1993).

Direct micro-indices in **Tables 1a, 1b and 1c** were derived from **bilaterally matched samples of prices** (i.e. using prices from the intersection of outlets that provided price data in the base and the observation months of any given direct index).

Direct micro-indices in **Tables 2a, 2b and 2c** were derived from **common samples of prices** (i.e. using prices from the intersection of outlets that provided price data in the months from December 1988 to January 1994).



**1a**  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Soft Drinks

Province: Ontario

Year	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	115.5	114.4	112.7	122.1	114.4	107.7	115.5	114.4	112.7	122.1	114.4	107.7
8902	104.5	104.0	103.4	108.4	104.0	99.8	120.7	119.0	116.5	132.4	119.0	107.5
8903	109.1	109.7	109.3	116.8	109.7	103.3	131.7	130.6	127.4	154.6	130.6	111.0
8904	101.2	100.8	100.2	105.3	100.8	96.3	133.3	131.6	127.7	162.8	131.6	106.9
8905	93.0	93.0	93.7	97.9	93.0	88.2	124.0	122.3	119.6	159.4	122.3	94.3
8906	97.0	96.5	95.9	105.3	96.5	87.9	120.2	118.0	114.7	167.8	118.0	82.9
8907	106.0	106.0	105.5	113.0	106.0	99.7	127.5	125.1	121.0	189.6	125.1	82.6
8908	92.5	92.1	92.5	96.8	92.1	87.0	118.0	115.3	111.9	183.5	115.3	71.9
8909	99.7	100.5	101.2	108.8	100.5	92.7	117.6	115.8	113.2	199.6	115.8	66.6
8910	93.6	91.8	90.1	103.3	91.8	80.8	110.0	106.3	102.0	206.3	106.3	53.9
8911	98.4	99.9	101.9	105.9	99.9	94.0	108.3	106.2	104.0	218.3	106.2	50.6
8912	87.2	87.9	88.9	90.9	87.9	84.5	94.4	93.3	92.5	198.4	93.3	42.8
9001	115.6	113.2	110.5	121.4	113.2	106.3	109.2	105.7	102.2	240.8	105.7	45.5
9002	102.7	104.8	106.5	113.3	104.8	95.6	112.1	110.8	108.9	272.9	110.8	43.5
9003	105.4	105.4	104.7	113.6	105.4	98.8	118.2	116.8	114.0	310.1	116.8	43.0
9004	97.6	98.1	99.0	104.2	98.1	92.6	115.4	114.6	112.8	323.2	114.6	39.8
9005	98.0	98.9	99.8	104.4	98.9	93.8	113.1	113.3	112.6	337.3	113.3	37.3
9006	102.4	102.7	102.8	106.1	102.7	99.6	115.8	116.4	115.7	357.9	116.4	37.2
9007	96.8	97.0	97.5	99.6	97.0	94.4	112.1	112.8	112.8	356.5	112.8	35.1
9008	98.6	98.9	99.1	101.8	98.9	96.1	110.6	111.6	111.8	363.0	111.6	33.7
9009	103.8	104.3	104.8	106.5	104.3	102.3	114.7	116.4	117.2	386.7	116.4	34.5
9010	97.4	97.1	96.8	99.1	97.1	94.9	111.7	113.0	113.4	383.3	113.0	32.7
9011	94.3	94.1	94.1	96.6	94.1	91.2	105.3	106.4	106.7	370.2	106.4	29.9
9012	79.1	77.1	75.4	82.8	77.1	72.2	83.3	82.0	80.5	306.5	82.0	21.5
9101	108.8	107.3	106.3	117.7	107.3	100.0	90.6	88.0	85.6	360.8	88.0	21.6
9102	114.7	117.6	120.0	131.1	117.6	106.5	103.9	103.6	102.7	472.9	103.6	22.9
9103	107.3	108.2	108.9	112.6	108.2	103.8	111.5	112.0	111.8	532.5	112.0	23.8
9104	99.3	99.9	100.3	102.3	99.9	97.6	110.7	111.9	112.2	544.6	111.9	23.3
9105	99.2	98.3	97.3	101.7	98.3	94.8	109.8	109.9	109.2	553.8	109.9	22.1
9106	99.9	101.0	101.9	103.7	101.0	98.7	109.7	111.0	111.2	574.1	111.0	21.8
9107	97.5	97.6	97.7	98.8	97.6	96.5	107.0	108.4	108.7	567.0	108.4	21.0
9108	101.2	99.9	98.8	103.0	99.9	97.0	108.3	108.3	107.4	584.3	108.3	20.4
9109	99.9	100.3	100.6	103.0	100.3	97.8	108.1	108.6	108.0	602.1	108.6	19.9
9110	100.8	101.5	102.5	104.0	101.5	99.2	109.0	110.3	110.7	626.4	110.3	19.8
9111	87.1	86.5	85.9	89.9	86.5	82.1	94.9	95.4	95.1	563.0	95.4	16.2
9112	100.0	100.1	100.2	103.4	100.1	97.2	94.8	95.5	95.3	582.4	95.5	15.8
9201	107.9	107.3	106.4	110.6	107.3	104.2	102.4	102.4	101.4	644.1	102.4	16.4
9202	85.0	84.0	83.7	86.8	84.0	80.8	87.0	86.1	84.9	558.9	86.1	13.3
9203	97.9	98.3	98.6	99.1	98.3	97.5	85.2	84.6	83.7	553.7	84.6	12.9
9204	105.4	105.9	106.0	107.8	105.9	104.2	89.8	89.6	88.8	596.9	89.6	13.5
9205	102.6	103.0	103.6	104.0	103.0	102.0	92.1	92.3	91.9	620.8	92.3	13.8
9206	102.6	102.5	102.3	103.1	102.5	101.9	94.5	94.6	94.1	640.2	94.6	14.0
9207	98.2	98.9	99.6	99.2	98.9	98.4	92.7	93.6	93.7	635.3	93.6	13.8
9208	101.4	101.0	100.6	101.6	101.0	100.5	94.0	94.5	94.3	645.4	94.5	13.9
9209	102.2	102.6	102.7	105.0	102.6	100.0	96.1	97.0	96.8	677.4	97.0	13.9
9210	107.4	108.9	110.9	112.6	108.9	106.5	103.2	105.6	107.3	762.9	105.6	14.8
9211	102.1	101.9	101.7	102.4	101.9	101.5	105.4	107.7	109.2	781.0	107.7	15.0
9212	98.3	98.4	98.7	98.8	98.4	98.0	103.5	105.9	107.7	771.4	105.9	14.7
9301	103.4	103.1	102.6	104.1	103.1	102.2	107.0	109.3	110.5	802.7	109.3	15.0
9302	106.6	106.3	105.8	107.1	106.3	105.5	114.1	116.1	117.0	859.8	116.1	15.8
9303	100.9	101.0	101.0	101.5	101.0	100.4	115.2	117.3	118.2	872.9	117.3	15.9
9304	98.4	98.3	98.4	98.8	98.3	97.8	113.3	115.3	116.3	862.7	115.3	15.6
9305	99.1	99.1	99.0	99.6	99.1	98.5	112.2	114.3	115.2	858.8	114.3	15.3
9306	101.8	101.4	100.8	102.2	101.4	100.7	114.2	115.9	116.1	877.8	115.9	15.4
9307	99.5	99.5	99.6	100.2	99.5	98.8	113.7	115.3	115.7	879.3	115.3	15.3
9308	103.1	103.6	104.1	104.5	103.6	102.9	117.1	119.4	120.5	918.4	119.4	15.7
9309	98.3	98.5	98.8	99.1	98.5	97.7	115.2	117.6	119.0	910.3	117.6	15.3
9310	98.4	98.5	98.6	98.9	98.5	98.0	113.3	115.8	117.3	900.5	115.8	15.0
9311	100.2	100.0	99.7	100.7	100.0	99.3	113.5	115.8	116.9	907.0	115.8	14.9
9312	99.6	99.7	99.8	100.0	99.7	99.4	113.1	115.5	116.7	906.6	115.5	14.8
9401	101.7	101.8	101.9	102.1	101.8	101.5	115.0	117.5	119.0	925.7	117.5	15.1

2a  
**YEARLY LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE  
 CALCULATED USING PRICES FROM**

**BILATERALLY MATCHED SAMPLES**

Commodity: Soft Drinks

Province: Ontario

Year	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	115.5	114.4	112.7	122.1	114.4	107.7	115.5	114.4	112.7	122.1	114.4	107.7
8902	120.7	119.1	116.6	126.3	119.1	113.0	120.7	119.1	116.6	126.3	119.1	113.0
8903	131.8	130.8	127.6	140.0	130.8	121.5	131.8	130.8	127.6	140.0	130.8	121.5
8904	133.9	132.3	128.4	142.4	132.3	122.2	133.9	132.3	128.4	142.4	132.3	122.2
8905	124.3	122.7	120.0	135.2	122.7	109.7	124.3	122.7	120.0	135.2	122.7	109.7
8906	120.2	117.9	114.6	126.6	117.9	109.9	120.2	117.9	114.6	126.6	117.9	109.9
8907	127.6	125.2	121.0	134.3	125.2	116.6	127.6	125.2	121.0	134.3	125.2	116.6
8908	118.5	115.9	112.5	124.9	115.9	107.2	118.5	115.9	112.5	124.9	115.9	107.2
8909	118.3	116.6	114.0	123.6	116.6	110.1	118.3	116.6	114.0	123.6	116.6	110.1
8910	110.4	106.7	102.5	118.1	106.7	95.9	110.4	106.7	102.5	118.1	106.7	95.9
8911	108.3	106.1	104.1	111.8	106.1	101.3	108.3	106.1	104.1	111.8	106.1	101.3
8912	94.4	93.5	92.9	96.1	93.5	90.7	94.4	93.5	92.9	96.1	93.5	90.7
9001	115.6	113.2	110.5	121.4	113.2	106.3	109.1	105.9	102.7	116.7	105.9	96.4
9002	118.8	118.8	117.8	129.5	118.8	106.5	112.1	111.0	109.5	124.5	111.0	96.6
9003	125.3	125.3	123.4	131.3	125.3	119.6	118.2	117.1	114.7	126.2	117.1	108.5
9004	122.2	122.9	122.1	131.5	122.9	115.7	115.4	114.9	113.4	126.4	114.9	104.9
9005	121.0	122.6	122.9	131.4	122.6	113.2	114.2	114.7	114.2	126.3	114.7	102.6
9006	123.1	125.2	125.6	130.5	125.2	120.4	116.1	117.0	116.7	125.4	117.0	109.2
9007	119.7	121.9	122.9	129.8	121.9	112.9	112.9	113.9	114.2	124.8	113.9	102.4
9008	118.2	120.7	122.0	128.0	120.7	113.3	111.5	112.8	113.4	123.0	112.8	102.7
9009	122.2	125.5	127.5	131.4	125.5	119.9	115.4	117.3	118.5	126.3	117.3	108.8
9010	119.6	122.3	123.7	130.2	122.3	113.8	112.9	114.4	115.0	125.1	114.4	103.2
9011	112.7	115.1	116.5	122.6	115.1	107.3	106.4	107.6	108.2	117.9	107.6	97.3
9012	89.0	88.6	87.6	95.2	88.6	80.0	84.0	82.8	81.4	91.6	82.8	72.5
9101	108.8	107.3	106.3	117.7	107.3	100.0	91.4	88.8	86.5	107.8	88.8	72.6
9102	124.8	126.2	127.5	138.6	126.2	115.5	104.8	104.5	103.8	126.9	104.5	83.8
9103	133.8	136.5	138.9	149.6	136.5	125.8	112.4	113.1	113.0	137.0	113.1	91.2
9104	132.8	136.3	139.3	148.4	136.3	127.0	111.6	112.9	113.4	135.9	112.9	92.1
9105	131.8	134.0	135.6	145.9	134.0	122.8	110.7	110.9	110.4	133.6	110.9	89.1
9106	130.7	134.3	137.2	146.0	134.3	124.8	109.7	111.2	111.7	133.7	111.2	90.6
9107	128.3	132.1	135.3	143.5	132.1	123.0	107.8	109.4	110.1	131.4	109.4	89.2
9108	129.3	131.6	133.5	143.3	131.6	121.6	108.6	109.0	108.7	131.2	109.0	88.2
9109	128.6	131.2	133.0	140.3	131.2	123.3	108.0	108.6	108.2	128.5	108.6	89.4
9110	129.2	132.7	135.7	144.0	132.7	124.3	108.5	109.9	110.4	131.9	109.9	90.2
9111	112.6	114.9	116.6	122.3	114.9	107.4	94.6	95.1	94.9	112.0	95.1	77.9
9112	112.8	115.2	117.0	125.2	115.2	105.8	94.7	95.3	95.2	114.7	95.3	76.8
9201	107.9	107.3	106.4	110.6	107.3	104.2	102.2	102.3	101.3	126.8	102.3	80.0
9202	91.8	90.2	89.1	94.1	90.2	86.5	86.9	86.0	84.9	107.8	86.0	66.4
9203	89.8	88.6	87.9	92.4	88.6	85.0	85.1	84.5	83.7	105.9	84.5	65.3
9204	94.5	93.8	93.2	96.7	93.8	90.7	89.5	89.4	88.7	110.9	89.4	69.6
9205	97.0	96.6	96.5	99.8	96.6	93.4	91.8	92.1	91.9	114.4	92.1	71.7
9206	99.5	99.1	98.8	102.0	99.1	96.0	94.3	94.5	94.0	117.0	94.5	73.7
9207	97.7	98.0	98.4	101.0	98.0	94.8	92.5	93.4	93.7	115.8	93.4	72.7
9208	99.1	99.0	99.0	101.8	99.0	95.9	93.8	94.3	94.3	116.7	94.3	73.6
9209	100.9	101.2	101.3	105.2	101.2	97.0	95.5	96.5	96.4	120.7	96.5	74.5
9210	108.6	110.6	112.8	114.1	110.6	106.9	102.9	105.4	107.4	130.9	105.4	82.1
9211	111.0	112.7	114.7	116.4	112.7	109.0	105.1	107.5	109.2	133.4	107.5	83.6
9212	109.0	110.9	113.2	114.4	110.9	107.4	103.2	105.8	107.7	131.1	105.8	82.4
9301	103.4	103.1	102.6	104.1	103.1	102.2	106.7	109.1	110.6	136.5	109.1	84.3
9302	110.2	109.6	108.6	110.9	109.6	108.2	113.8	115.9	117.0	145.4	115.9	89.2
9303	111.2	110.7	109.7	111.7	110.7	109.7	114.8	117.0	118.2	146.5	117.0	90.4
9304	109.4	108.8	108.0	110.4	108.8	107.2	112.9	115.1	116.3	144.8	115.1	88.4
9305	108.4	107.8	106.9	109.5	107.8	106.1	111.9	114.0	115.2	143.6	114.0	87.5
9306	110.3	109.4	107.8	111.0	109.4	107.6	113.9	115.7	116.1	145.6	115.7	88.7
9307	109.9	108.9	107.5	110.6	108.9	107.2	113.4	115.2	115.8	145.0	115.2	88.4
9308	112.7	112.4	111.7	113.8	112.4	111.0	116.4	118.9	120.3	149.2	118.9	91.6
9309	110.3	109.9	109.2	111.8	109.9	107.8	113.9	116.2	117.6	146.6	116.2	88.9
9310	108.5	108.3	107.7	109.6	108.3	106.9	112.0	114.5	116.1	143.8	114.5	88.1
9311	108.6	108.3	107.7	110.1	108.3	106.1	112.1	114.5	116.0	144.4	114.5	87.5
9312	108.2	107.9	107.2	109.5	107.9	106.0	111.7	114.1	115.5	143.6	114.1	87.4
9401	101.7	101.8	101.9	102.1	101.8	101.5	113.6	116.1	117.7	146.6	116.1	88.7

3a  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity:	Soft Drinks						Province: Ontario					
Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column					
Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8812	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
8901	115.5	114.4	112.7	122.1	114.4	107.7	115.5	114.4	112.7	122.1	114.4	107.7
8902	120.7	119.1	116.6	126.3	119.1	113.0	120.7	119.1	116.6	126.3	119.1	113.0
8903	131.8	130.8	127.6	140.0	130.8	121.5	131.8	130.8	127.6	140.0	130.8	121.5
8904	133.9	132.3	128.4	142.4	132.3	122.2	133.9	132.3	128.4	142.4	132.3	122.2
8905	124.3	122.7	120.0	135.2	122.7	109.7	124.3	122.7	120.0	135.2	122.7	109.7
8906	120.2	117.9	114.6	126.6	117.9	109.9	120.2	117.9	114.6	126.6	117.9	109.9
8907	127.6	125.3	121.0	134.3	125.3	116.7	127.6	125.3	121.0	134.3	125.3	116.7
8908	118.5	115.9	112.5	124.9	115.9	107.3	118.5	115.9	112.5	124.9	115.9	107.3
8909	118.3	116.6	114.0	123.6	116.6	110.1	118.3	116.6	114.0	123.6	116.6	110.1
8910	110.4	106.7	102.5	118.1	106.7	95.9	110.4	106.7	102.5	118.1	106.7	95.9
8911	108.3	106.1	104.1	111.8	106.1	101.3	108.3	106.1	104.1	111.8	106.1	101.3
8912	94.4	93.5	92.9	96.1	93.5	90.7	94.4	93.5	92.9	96.1	93.5	90.7
9001	109.5	105.9	102.5	113.3	105.9	99.7	109.5	105.9	102.5	113.3	105.9	99.7
9002	112.7	111.5	109.6	120.0	111.5	101.7	112.7	111.5	109.6	120.0	111.5	101.7
9003	117.9	116.5	113.7	120.7	116.5	112.3	117.9	116.5	113.7	120.7	116.5	112.3
9004	115.3	114.4	112.7	121.0	114.4	108.1	115.3	114.4	112.7	121.0	114.4	108.1
9005	114.6	114.7	113.9	122.4	114.7	106.5	114.6	114.7	113.9	122.4	114.7	106.5
9006	117.0	117.6	117.0	121.9	117.6	113.6	117.0	117.6	117.0	121.9	117.6	113.6
9007	113.2	113.9	113.9	121.4	113.9	106.0	113.2	113.9	113.9	121.4	113.9	106.0
9008	111.1	112.3	112.7	118.4	112.3	105.7	111.1	112.3	112.7	118.4	112.3	105.7
9009	115.7	117.5	118.3	122.5	117.5	112.4	115.7	117.5	118.3	122.5	117.5	112.4
9010	113.1	114.5	114.9	121.7	114.5	106.8	113.1	114.5	114.9	121.7	114.5	106.8
9011	106.4	107.4	107.8	114.0	107.4	100.4	106.4	107.4	107.8	114.0	107.4	100.4
9012	84.2	82.6	80.8	89.6	82.6	74.2	84.2	82.6	80.8	89.6	82.6	74.2
9101	91.5	88.8	86.2	95.3	88.8	83.2	91.5	88.8	86.2	95.3	88.8	83.2
9102	105.2	105.0	104.3	114.1	105.0	96.0	105.2	105.0	104.3	114.1	105.0	96.0
9103	114.2	115.0	115.0	121.4	115.0	108.9	114.2	115.0	115.0	121.4	115.0	108.9
9104	113.5	115.1	115.8	120.4	115.1	110.1	113.5	115.1	115.8	120.4	115.1	110.1
9105	111.0	111.5	111.2	119.1	111.5	104.4	111.0	111.5	111.2	119.1	111.5	104.4
9106	110.1	112.0	112.9	116.8	112.0	107.0	110.1	112.0	112.9	116.8	112.0	107.0
9107	107.5	109.5	110.7	115.0	109.5	104.2	107.5	109.5	110.7	115.0	109.5	104.2
9108	110.4	110.9	110.6	118.4	110.9	103.5	110.4	110.9	110.6	118.4	110.9	103.5
9109	107.7	108.7	108.6	115.4	108.7	102.0	107.7	108.7	108.6	115.4	108.7	102.0
9110	108.7	110.2	111.0	114.2	110.2	106.5	108.7	110.2	111.0	114.2	110.2	106.5
9111	93.2	93.9	93.7	99.5	93.9	86.8	93.2	93.9	93.7	99.5	93.9	86.8
9112	92.6	93.7	94.1	98.4	93.7	88.8	92.6	93.7	94.1	98.4	93.7	88.8
9201	101.9	102.5	102.1	107.4	102.5	97.7	101.9	102.5	102.1	107.4	102.5	97.7
9202	85.9	85.3	84.4	91.1	85.3	80.0	85.9	85.3	84.4	91.1	85.3	80.0
9203	84.0	83.8	83.2	89.1	83.8	78.8	84.0	83.8	83.2	89.1	83.8	78.8
9204	89.2	89.5	88.9	95.4	89.5	83.3	89.2	89.5	88.9	95.4	89.5	83.3
9205	90.9	91.5	91.5	96.7	91.5	86.3	90.9	91.5	91.5	96.7	91.5	86.3
9206	93.6	94.2	94.0	99.8	94.2	88.5	93.6	94.2	94.0	99.8	94.2	88.5
9207	92.4	93.4	93.9	98.5	93.4	88.2	92.4	93.4	93.9	98.5	93.4	88.2
9208	94.2	94.9	95.0	100.9	94.9	88.9	94.2	94.9	95.0	100.9	94.9	88.9
9209	94.7	95.6	95.6	101.2	95.6	88.4	94.7	95.6	95.6	101.2	95.6	88.4
9210	102.7	105.3	107.5	108.8	105.3	101.6	102.7	105.3	107.5	108.8	105.3	101.6
9211	104.2	106.8	108.8	110.5	106.8	103.1	104.2	106.8	108.8	110.5	106.8	103.1
9212	101.5	104.2	106.4	107.6	104.2	100.5	101.5	104.2	106.4	107.6	104.2	100.5
9301	106.4	108.8	110.3	113.1	108.8	104.3	106.4	108.8	110.3	113.1	108.8	104.3
9302	113.7	116.1	117.5	121.5	116.1	110.5	113.7	116.1	117.5	121.5	116.1	110.5
9303	114.5	117.0	118.5	122.0	117.0	111.7	114.5	117.0	118.5	122.0	117.0	111.7
9304	113.3	115.6	117.1	120.7	115.6	110.2	113.3	115.6	117.1	120.7	115.6	110.2
9305	111.9	114.2	115.5	119.5	114.2	108.3	111.9	114.2	115.5	119.5	114.2	108.3
9306	113.3	115.2	115.9	121.6	115.2	107.6	113.3	115.2	115.9	121.6	115.2	107.6
9307	113.0	115.1	116.1	121.0	115.1	108.2	113.0	115.1	116.1	121.0	115.1	108.2
9308	117.1	119.7	121.2	125.7	119.7	113.2	117.1	119.7	121.2	125.7	119.7	113.2
9309	114.5	116.8	118.2	123.3	116.8	109.5	114.5	116.8	118.2	123.3	116.8	109.5
9310	112.0	114.4	116.1	120.4	114.4	107.5	112.0	114.4	116.1	120.4	114.4	107.5
9311	113.2	115.6	117.2	121.2	115.6	109.0	113.2	115.6	117.2	121.2	115.6	109.0
9312	112.6	114.9	116.3	120.4	114.9	108.5	112.6	114.9	116.3	120.4	114.9	108.5
9401	101.7	101.8	102.0	102.1	101.8	101.5	114.5	117.0	118.6	122.9	117.0	110.1

**1b**  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Soft Drinks

Province: Ontario

Year	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column					
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR
8901	113.8	112.6	111.0	120.1	112.6	106.1	113.8	112.6	111.0	120.1	112.6	106.1
8902	104.7	104.1	103.3	109.0	104.1	99.4	119.2	117.2	114.7	130.8	117.2	105.5
8903	112.7	113.3	112.5	120.6	113.3	106.7	134.3	132.8	129.1	157.8	132.8	112.6
8904	101.2	100.7	100.2	104.9	100.7	96.5	135.9	133.8	129.3	165.5	133.8	108.6
8905	93.1	93.2	94.0	98.0	93.2	88.4	126.5	124.6	121.6	162.3	124.6	96.1
8906	95.7	94.9	94.2	104.0	94.9	86.2	121.1	118.3	114.5	168.7	118.3	82.8
8907	107.8	108.2	107.8	115.4	108.2	102.0	130.6	127.9	123.4	194.7	127.9	84.4
8908	90.9	90.4	90.7	95.3	90.4	85.0	118.7	115.6	112.0	185.6	115.6	71.7
8909	99.0	99.9	100.6	108.9	99.9	91.5	117.5	115.5	112.7	202.1	115.5	65.7
8910	95.3	93.8	92.5	105.8	93.8	82.3	111.9	108.3	104.2	213.9	108.3	54.1
8911	96.7	97.9	99.7	103.6	97.9	92.3	108.3	106.0	103.9	221.6	106.0	49.9
8912	87.3	88.3	89.5	91.2	88.3	84.9	94.5	93.6	93.0	202.2	93.6	42.3
9001	115.8	112.9	109.8	121.6	112.9	105.5	109.5	105.7	102.1	246.0	105.7	44.7
9002	104.7	107.2	109.0	115.3	107.2	98.3	114.7	113.3	111.2	283.7	113.3	43.9
9003	102.1	102.0	101.3	109.4	102.0	96.2	117.1	115.6	112.7	310.4	115.6	42.2
9004	99.0	99.4	100.2	105.8	99.4	93.7	115.9	114.9	113.0	328.4	114.9	39.6
9005	99.2	100.1	100.9	105.5	100.1	95.0	114.9	114.9	113.9	346.4	114.9	37.6
9006	102.4	102.8	102.9	105.9	102.8	99.9	117.7	118.1	117.2	367.0	118.1	37.5
9007	97.1	97.4	98.0	99.9	97.4	94.9	114.4	115.0	114.9	366.6	115.0	35.6
9008	98.5	98.7	98.9	101.2	98.7	96.4	112.6	113.5	113.7	371.0	113.5	34.3
9009	103.6	104.2	104.8	106.6	104.2	102.1	116.7	118.4	119.1	395.4	118.4	35.1
9010	100.1	99.6	99.0	101.5	99.6	97.6	116.8	117.9	117.9	401.3	117.9	34.2
9011	92.2	92.2	92.3	94.7	92.2	89.0	107.7	108.6	108.8	380.0	108.6	30.5
9012	78.6	76.3	74.5	82.2	76.3	71.3	84.6	82.9	81.0	312.3	82.9	21.7
9101	105.2	104.4	104.1	113.9	104.4	97.6	89.0	86.6	84.4	355.7	86.6	21.2
9102	117.8	120.8	123.0	134.7	120.8	108.9	104.9	104.6	103.8	479.2	104.6	23.1
9103	107.8	109.0	110.1	112.9	109.0	105.0	113.1	114.0	114.2	541.3	114.0	24.2
9104	100.3	100.8	101.1	103.4	100.8	98.4	113.4	114.9	115.4	559.8	114.9	23.8
9105	99.6	98.5	97.5	101.8	98.5	95.3	113.0	113.2	112.5	570.0	113.2	22.7
9106	97.1	98.5	99.8	100.6	98.5	96.6	109.7	111.5	112.3	573.5	111.5	21.9
9107	97.8	98.0	98.3	99.3	98.0	96.9	107.3	109.3	110.4	569.5	109.3	21.2
9108	103.4	101.8	100.3	104.8	101.8	99.0	111.0	111.2	110.7	597.1	111.2	21.0
9109	97.9	98.3	98.4	100.6	98.3	96.1	108.7	109.3	108.9	600.5	109.3	20.2
9110	100.0	100.7	101.6	103.1	100.7	98.5	108.6	110.1	110.7	619.1	110.1	19.9
9111	86.9	86.3	85.7	89.7	86.3	82.0	94.4	95.0	94.9	555.3	95.0	16.3
9112	100.1	100.6	101.0	103.2	100.6	98.3	94.5	95.6	95.8	573.1	95.6	16.1
9201	109.5	108.9	108.3	111.3	108.9	107.1	103.5	104.1	103.7	637.7	104.1	17.2
9202	83.2	82.1	81.5	84.9	82.1	78.7	86.1	85.5	84.6	541.6	85.5	13.5
9203	98.0	98.4	98.7	98.9	98.4	97.9	84.3	84.1	83.5	535.9	84.1	13.3
9204	106.8	107.4	107.5	109.3	107.4	105.6	90.1	90.3	89.7	585.7	90.3	14.0
9205	101.5	102.0	102.5	103.1	102.0	100.9	91.5	92.1	92.0	603.7	92.1	14.1
9206	103.2	103.1	102.9	103.8	103.1	102.3	94.4	94.9	94.7	626.9	94.9	14.4
9207	98.8	99.4	100.1	99.7	99.4	99.1	93.3	94.4	94.8	625.1	94.4	14.3
9208	101.8	101.4	101.0	101.8	101.4	101.1	95.0	95.7	95.8	636.1	95.7	14.5
9209	99.3	99.5	99.4	101.3	99.5	97.3	94.3	95.3	95.2	644.6	95.3	14.1
9210	108.9	110.6	112.9	114.9	110.6	107.8	102.6	105.3	107.5	740.9	105.3	15.2
9211	101.8	101.6	101.4	101.9	101.6	101.3	104.5	107.0	109.0	755.1	107.0	15.4
9212	97.8	98.0	98.2	98.2	98.0	97.7	102.2	104.9	107.0	741.7	104.9	15.0
9301	104.4	103.9	103.1	104.7	103.9	103.2	106.7	109.0	110.4	776.3	109.0	15.5
9302	107.4	107.2	107.0	108.0	107.2	106.5	114.6	116.8	118.2	838.7	116.8	16.5
9303	100.4	100.5	100.6	101.0	100.5	99.9	115.0	117.4	118.9	847.4	117.4	16.5
9304	99.0	98.9	98.9	99.3	98.9	98.5	113.8	116.1	117.5	841.5	116.1	16.2
9305	98.9	98.8	98.7	99.3	98.8	98.3	112.5	114.7	116.0	835.6	114.7	16.0
9306	101.4	101.0	100.3	101.8	101.0	100.2	114.0	115.9	116.4	850.7	115.9	16.0
9307	99.1	99.3	99.7	99.8	99.3	98.8	113.0	115.1	116.0	849.2	115.1	15.8
9308	103.8	104.1	104.7	104.9	104.1	103.6	117.3	119.9	121.5	890.7	119.9	16.4
9309	97.7	97.6	97.5	98.1	97.6	96.9	114.6	116.9	118.4	873.9	116.9	15.9
9310	97.8	97.9	98.2	98.4	97.9	97.5	112.0	114.5	116.2	860.0	114.5	15.5
9311	101.0	100.9	100.9	101.5	100.9	100.4	113.1	115.6	117.2	872.8	115.6	15.5
9312	99.4	99.4	99.3	99.7	99.4	99.1	112.4	114.9	116.4	870.0	114.9	15.4
9401	101.8	101.9	102.0	102.2	101.9	101.6	114.4	117.0	118.7	888.8	117.0	15.6

2b

**ONCE-A-YEAR LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE  
CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Soft Drinks

Province: Ontario

Year	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column					
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR
8901	113.8	112.6	111.0	120.1	112.6	106.1	113.8	112.6	111.0	120.1	112.6	106.1
8902	119.2	117.2	114.7	124.3	117.2	111.3	119.2	117.2	114.7	124.3	117.2	111.3
8903	134.3	132.8	129.1	142.3	132.8	123.2	134.3	132.8	129.1	142.3	132.8	123.2
8904	135.9	133.8	129.3	144.1	133.8	123.4	135.9	133.8	129.3	144.1	133.8	123.4
8905	126.5	124.6	121.6	137.0	124.6	111.5	126.5	124.6	121.6	137.0	124.6	111.5
8906	121.1	118.3	114.5	127.1	118.3	110.1	121.1	118.3	114.5	127.1	118.3	110.1
8907	130.6	127.9	123.4	137.0	127.9	119.2	130.6	127.9	123.4	137.0	127.9	119.2
8908	118.7	115.6	112.0	124.6	115.6	106.9	118.7	115.6	112.0	124.6	115.6	106.9
8909	117.5	115.5	112.7	122.4	115.5	109.2	117.5	115.5	112.7	122.4	115.5	109.2
8910	111.9	108.3	104.2	119.0	108.3	97.9	111.9	108.3	104.2	119.0	108.3	97.9
8911	108.3	106.0	103.9	111.4	106.0	101.3	108.3	106.0	103.9	111.4	106.0	101.3
8912	94.5	93.6	93.0	95.7	93.6	91.2	94.5	93.6	93.0	95.7	93.6	91.2
9001	115.8	112.9	109.8	121.6	112.9	105.5	109.5	105.7	102.1	116.4	105.7	96.2
9002	121.3	121.1	119.6	131.4	121.1	109.1	114.7	113.3	111.2	125.7	113.3	99.4
9003	123.9	123.5	121.2	129.3	123.5	118.0	117.1	115.6	112.7	123.7	115.6	107.5
9004	122.6	122.8	121.5	131.0	122.8	115.7	115.9	114.9	113.0	125.4	114.9	105.5
9005	121.6	122.8	122.5	130.7	122.8	114.0	114.9	114.9	113.9	125.1	114.9	103.9
9006	124.6	126.2	126.1	131.3	126.2	121.6	117.7	118.1	117.2	125.6	118.1	110.8
9007	121.0	122.9	123.5	130.2	122.9	114.4	114.4	115.0	114.9	124.6	115.0	104.3
9008	119.2	121.4	122.2	128.2	121.4	114.2	112.6	113.5	113.7	122.7	113.5	104.1
9009	123.5	126.5	128.0	131.4	126.5	121.7	116.7	118.4	119.1	125.7	118.4	111.0
9010	123.6	126.0	126.8	133.7	126.0	117.2	116.8	117.9	117.9	127.9	117.9	106.8
9011	113.9	116.1	117.0	123.1	116.1	108.5	107.7	108.6	108.8	117.8	108.6	99.0
9012	89.5	88.6	87.1	95.4	88.6	79.9	84.6	82.9	81.0	91.3	82.9	72.8
9101	105.2	104.4	104.1	113.9	104.4	97.6	89.0	86.6	84.4	104.0	86.6	71.1
9102	124.0	126.1	128.1	138.6	126.1	115.1	104.9	104.6	103.8	126.5	104.6	83.8
9103	133.6	137.5	141.0	150.1	137.5	126.4	113.1	114.0	114.2	137.0	114.0	92.0
9104	134.0	138.6	142.5	150.2	138.6	128.9	113.4	114.9	115.4	137.1	114.9	93.8
9105	133.5	136.5	138.9	148.3	136.5	125.1	113.0	113.2	112.5	135.3	113.2	91.1
9106	129.6	134.5	138.6	145.7	134.5	124.9	109.7	111.5	112.3	133.0	111.5	91.0
9107	126.8	131.9	136.3	142.8	131.9	122.9	107.3	109.3	110.4	130.3	109.3	89.5
9108	131.2	134.2	136.7	146.4	134.2	123.4	111.0	111.2	110.7	133.6	111.2	89.8
9109	128.5	131.8	134.5	141.3	131.8	123.7	108.7	109.3	108.9	129.0	109.3	90.1
9110	128.4	132.8	136.7	143.7	132.8	124.4	108.6	110.1	110.7	131.2	110.1	90.6
9111	111.5	114.6	117.1	122.5	114.6	106.8	94.4	95.0	94.9	111.8	95.0	77.7
9112	111.6	115.3	118.3	124.8	115.3	106.4	94.5	95.6	95.8	113.9	95.6	77.5
9201	109.5	108.9	108.3	111.3	108.9	107.1	103.5	104.1	103.7	126.8	104.1	82.9
9202	91.1	89.4	88.3	92.9	89.4	86.2	86.1	85.5	84.6	105.8	85.5	66.8
9203	89.3	88.0	87.1	90.9	88.0	85.3	84.3	84.1	83.5	103.5	84.1	66.1
9204	95.4	94.5	93.7	96.8	94.5	92.0	90.1	90.3	89.7	110.3	90.3	71.3
9205	96.8	96.3	96.0	98.8	96.3	93.8	91.5	92.1	92.0	112.6	92.1	72.7
9206	99.9	99.3	98.8	101.6	99.3	97.1	94.4	94.9	94.7	115.7	94.9	75.2
9207	98.7	98.7	99.0	100.9	98.7	96.5	93.3	94.4	94.8	115.0	94.4	74.8
9208	100.5	100.1	99.9	102.2	100.1	98.0	95.0	95.7	95.8	116.5	95.7	75.9
9209	99.8	99.7	99.4	102.5	99.7	96.8	94.3	95.3	95.2	116.7	95.3	75.0
9210	108.7	110.2	112.1	112.6	110.2	108.0	102.6	105.3	107.5	128.3	105.3	83.7
9211	110.6	112.0	113.7	114.5	112.0	109.7	104.5	107.0	109.0	130.4	107.0	85.0
9212	108.1	109.7	111.7	112.1	109.7	107.5	102.2	104.9	107.0	127.7	104.9	83.3
9301	104.4	103.9	103.1	104.7	103.9	103.2	106.7	109.0	110.4	133.7	109.0	85.9
9302	112.1	111.4	110.4	112.5	111.4	110.3	114.6	116.8	118.2	143.7	116.8	91.9
9303	112.6	112.0	111.0	112.8	112.0	111.2	115.0	117.4	118.9	144.0	117.4	92.6
9304	111.4	110.7	109.8	112.0	110.7	109.4	113.8	116.1	117.5	143.1	116.1	91.1
9305	110.1	109.4	108.4	111.0	109.4	107.7	112.5	114.7	116.0	141.8	114.7	89.7
9306	111.6	110.5	108.7	112.1	110.5	108.6	114.0	115.9	116.4	143.2	115.9	90.4
9307	110.6	109.7	108.4	111.1	109.7	108.2	113.0	115.1	116.0	142.0	115.1	90.1
9308	114.8	114.3	113.5	115.7	114.3	112.9	117.3	119.9	121.5	147.7	119.9	94.1
9309	112.1	111.5	110.6	113.3	111.5	109.4	114.6	116.9	118.4	144.8	116.9	91.1
9310	109.6	109.2	108.5	110.5	109.2	107.8	112.0	114.5	116.2	141.2	114.5	89.8
9311	110.7	110.2	109.5	112.0	110.2	108.2	113.1	115.6	117.2	143.0	115.6	90.1
9312	110.0	109.5	108.7	111.1	109.5	107.8	112.4	114.9	116.4	141.9	114.9	89.7
9401	101.8	101.9	102.0	102.2	101.9	101.6	114.4	117.0	118.7	145.0	117.0	91.2

**3b**  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Soft Drinks

Province: Ontario

Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	113.8	112.6	111.0	120.1	112.6	106.1	113.8	112.6	111.0	120.1	112.6	106.1
8902	119.2	117.2	114.7	124.4	117.2	111.3	119.2	117.2	114.7	124.4	117.2	111.3
8903	134.3	132.8	129.1	142.3	132.8	123.2	134.3	132.8	129.1	142.3	132.8	123.2
8904	135.9	133.8	129.3	144.1	133.8	123.4	135.9	133.8	129.3	144.1	133.8	123.4
8905	126.5	124.6	121.6	137.0	124.6	111.5	126.5	124.6	121.6	137.0	124.6	111.5
8906	121.1	118.3	114.5	127.1	118.3	110.1	121.1	118.3	114.5	127.1	118.3	110.1
8907	130.6	127.9	123.4	137.1	127.9	119.2	130.6	127.9	123.4	137.1	127.9	119.2
8908	118.7	115.6	112.0	124.6	115.6	106.9	118.7	115.6	112.0	124.6	115.6	106.9
8909	117.5	115.5	112.7	122.4	115.5	109.2	117.5	115.5	112.7	122.4	115.5	109.2
8910	111.9	108.3	104.2	119.0	108.3	97.9	111.9	108.3	104.2	119.0	108.3	97.9
8911	108.3	106.0	103.9	111.4	106.0	101.3	108.3	106.0	103.9	111.4	106.0	101.3
8912	94.5	93.6	93.0	95.7	93.6	91.2	94.5	93.6	93.0	95.7	93.6	91.2
9001	109.5	105.7	102.1	112.9	105.7	99.5	109.5	105.7	102.1	112.9	105.7	99.5
9002	114.7	113.3	111.3	121.1	113.3	104.1	114.7	113.3	111.3	121.1	113.3	104.1
9003	117.1	115.6	112.7	119.7	115.6	111.5	117.1	115.6	112.7	119.7	115.6	111.5
9004	115.9	114.9	113.0	121.0	114.9	109.2	115.9	114.9	113.0	121.0	114.9	109.2
9005	114.9	114.9	113.9	122.1	114.9	107.2	114.9	114.9	113.9	122.1	114.9	107.2
9006	117.7	118.1	117.2	122.2	118.1	114.2	117.7	118.1	117.2	122.2	118.1	114.2
9007	114.4	115.0	114.9	122.0	115.0	107.5	114.4	115.0	114.9	122.0	115.0	107.5
9008	112.6	113.6	113.7	119.6	113.6	106.9	112.6	113.6	113.7	119.6	113.6	106.9
9009	116.7	118.4	119.1	122.9	118.4	113.9	116.7	118.4	119.1	122.9	118.4	113.9
9010	116.8	117.9	117.9	124.7	117.9	110.5	116.8	117.9	117.9	124.7	117.9	110.5
9011	107.7	108.6	108.8	114.8	108.6	102.0	107.7	108.6	108.8	114.8	108.6	102.0
9012	84.6	82.9	81.0	89.7	82.9	74.7	84.6	82.9	81.0	89.7	82.9	74.7
9101	89.0	86.6	84.4	92.8	86.6	81.3	89.0	86.6	84.4	92.8	86.6	81.3
9102	104.9	104.6	103.8	113.5	104.6	95.7	104.9	104.6	103.8	113.5	104.6	95.7
9103	113.1	114.0	114.2	120.2	114.0	108.1	113.1	114.0	114.2	120.2	114.0	108.1
9104	113.4	114.9	115.5	120.4	114.9	109.8	113.4	114.9	115.5	120.4	114.9	109.8
9105	113.0	113.2	112.5	120.8	113.2	105.9	113.0	113.2	112.5	120.8	113.2	105.9
9106	109.7	111.5	112.3	116.4	111.5	106.5	109.7	111.5	112.3	116.4	111.5	106.5
9107	107.3	109.3	110.4	115.0	109.3	103.8	107.3	109.3	110.4	115.0	109.3	103.8
9108	111.0	111.2	110.7	118.8	111.2	103.7	111.0	111.2	110.7	118.8	111.2	103.7
9109	108.7	109.3	108.9	116.1	109.3	102.4	108.7	109.3	108.9	116.1	109.3	102.4
9110	108.7	110.1	110.7	114.1	110.1	106.3	108.7	110.1	110.7	114.1	110.1	106.3
9111	94.4	95.0	94.9	100.6	95.0	87.9	94.4	95.0	94.9	100.6	95.0	87.9
9112	94.5	95.6	95.8	100.1	95.6	90.7	94.5	95.6	95.8	100.1	95.6	90.7
9201	103.5	104.1	103.7	108.9	104.1	99.2	103.5	104.1	103.7	108.9	104.1	99.2
9202	86.1	85.5	84.6	91.4	85.5	80.0	86.1	85.5	84.6	91.4	85.5	80.0
9203	84.3	84.1	83.5	89.5	84.1	78.9	84.3	84.1	83.5	89.5	84.1	78.9
9204	90.1	90.3	89.8	96.3	90.3	83.9	90.1	90.3	89.8	96.3	90.3	83.9
9205	91.5	92.1	92.0	97.4	92.1	86.7	91.5	92.1	92.0	97.4	92.1	86.7
9206	94.4	94.9	94.7	100.7	94.9	89.1	94.4	94.9	94.7	100.7	94.9	89.1
9207	93.3	94.4	94.8	99.6	94.4	88.9	93.3	94.4	94.8	99.6	94.4	88.9
9208	95.0	95.7	95.8	101.7	95.7	89.5	95.0	95.7	95.8	101.7	95.7	89.5
9209	94.3	95.3	95.2	101.0	95.3	87.9	94.3	95.3	95.2	101.0	95.3	87.9
9210	102.7	105.3	107.5	108.9	105.3	101.5	102.7	105.3	107.5	108.9	105.3	101.5
9211	104.5	107.0	109.0	110.8	107.0	103.2	104.5	107.0	109.0	110.8	107.0	103.2
9212	102.2	104.9	107.1	108.2	104.9	101.3	102.2	104.9	107.1	108.2	104.9	101.3
9301	106.7	109.0	110.4	113.5	109.0	104.4	106.7	109.0	110.4	113.5	109.0	104.4
9302	114.6	116.9	118.2	122.5	116.9	111.0	114.6	116.9	118.2	122.5	116.9	111.0
9303	115.0	117.4	118.9	122.6	117.4	112.0	115.0	117.4	118.9	122.6	117.4	112.0
9304	113.8	116.1	117.5	121.3	116.1	110.6	113.8	116.1	117.5	121.3	116.1	110.6
9305	112.5	114.7	116.0	120.2	114.7	108.6	112.5	114.7	116.0	120.2	114.7	108.6
9306	114.0	115.9	116.4	122.5	115.9	107.9	114.0	115.9	116.4	122.5	115.9	107.9
9307	113.0	115.1	116.1	121.2	115.1	108.0	113.0	115.1	116.1	121.2	115.1	108.0
9308	117.3	119.9	121.5	126.0	119.9	113.2	117.3	119.9	121.5	126.0	119.9	113.2
9309	114.6	116.9	118.4	123.6	116.9	109.4	114.6	116.9	118.4	123.6	116.9	109.4
9310	112.0	114.5	116.2	120.6	114.5	107.5	112.0	114.5	116.2	120.6	114.5	107.5
9311	113.1	115.6	117.2	121.3	115.6	108.8	113.1	115.6	117.2	121.3	115.6	108.8
9312	112.4	114.9	116.4	120.5	114.9	108.3	112.4	114.9	116.4	120.5	114.9	108.3
9401	101.8	101.9	102.0	102.2	101.9	101.6	114.4	117.0	118.7	123.1	117.0	110.1

1a  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES  
CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Women's Shoes

Province: Ontario

Year Month	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	98.4	96.9	95.4	97.5	96.9	96.2	98.4	96.9	95.4	97.5	96.9	96.2
8902	100.3	101.0	101.9	101.6	101.0	100.6	98.7	97.9	97.2	99.0	97.9	96.8
8903	100.8	101.0	101.3	101.4	101.0	100.6	99.5	98.9	98.5	100.5	98.9	97.4
8904	101.5	101.3	100.6	101.7	101.3	100.9	101.0	100.2	99.1	102.1	100.2	98.3
8905	100.5	100.5	100.6	100.7	100.5	100.4	101.5	100.7	99.7	102.8	100.7	98.6
8906	99.4	99.4	99.4	99.4	99.4	99.3	100.9	100.1	99.1	102.2	100.1	97.9
8907	97.4	95.4	92.8	96.1	95.4	94.6	98.3	95.4	92.0	98.2	95.4	92.6
8908	99.8	99.8	100.0	100.3	99.8	99.3	98.0	95.3	92.1	98.5	95.3	91.9
8909	100.8	101.9	103.4	103.4	101.9	100.7	98.9	97.1	95.2	101.8	97.1	92.5
8910	98.3	99.5	99.8	100.9	99.5	97.9	97.2	96.7	95.0	102.8	96.7	90.6
8911	99.0	97.9	96.8	98.2	97.9	97.6	96.2	94.6	91.9	100.9	94.6	88.4
8912	98.9	99.4	100.6	99.9	99.4	98.9	95.2	94.1	92.5	100.9	94.1	87.4
9001	99.1	97.7	96.2	98.5	97.7	96.9	94.3	91.9	88.9	99.4	91.9	84.7
9002	103.4	105.6	107.9	106.8	105.6	104.5	97.5	97.1	95.9	106.2	97.1	88.5
9003	100.3	100.4	100.9	100.9	100.4	99.9	97.8	97.5	96.8	107.2	97.5	88.5
9004	101.1	102.0	103.1	102.3	102.0	101.7	98.9	99.4	99.7	109.7	99.4	90.0
9005	99.3	98.8	98.2	99.1	98.8	98.5	98.2	98.2	98.0	108.6	98.2	88.6
9006	101.6	101.8	101.7	102.3	101.8	101.4	99.8	100.0	99.6	111.1	100.0	89.8
9007	98.5	98.3	98.2	99.1	98.3	97.5	98.3	98.3	97.8	110.1	98.3	87.6
9008	102.6	103.4	104.2	104.3	103.4	102.6	100.9	101.7	101.9	114.8	101.7	89.8
9009	102.2	102.0	101.7	102.2	102.0	101.7	103.1	103.7	103.6	117.4	103.7	91.4
9010	101.6	100.8	100.1	101.1	100.8	100.5	104.7	104.5	103.7	118.7	104.5	91.9
9011	100.0	99.4	98.9	99.7	99.4	99.1	104.7	103.9	102.6	118.4	103.9	91.0
9012	99.1	98.7	98.6	99.2	98.7	98.3	103.7	102.6	101.2	117.4	102.6	89.4
9101	101.8	101.6	100.6	102.5	101.6	100.7	105.6	104.2	101.8	120.4	104.2	90.0
9102	101.0	101.5	101.9	101.7	101.5	101.3	106.7	105.7	103.7	122.4	105.7	91.2
9103	101.4	102.3	103.6	102.5	102.3	102.0	108.2	108.1	107.4	125.4	108.1	93.0
9104	100.4	100.2	99.9	100.5	100.2	99.9	108.6	108.3	107.3	126.1	108.3	92.9
9105	99.3	98.8	98.3	98.9	98.8	98.6	107.8	107.0	105.4	124.7	107.0	91.6
9106	99.2	99.2	99.2	99.5	99.2	98.8	107.0	106.1	104.6	124.1	106.1	90.5
9107	99.0	98.2	96.9	98.5	98.2	97.8	105.9	104.2	101.4	122.2	104.2	88.6
9108	100.2	100.9	102.1	101.2	100.9	100.7	106.1	105.2	103.5	123.7	105.2	89.1
9109	99.9	100.0	100.1	100.7	100.0	99.4	106.0	105.2	103.6	124.6	105.2	88.6
9110	98.5	99.2	99.8	99.9	99.2	98.6	104.4	104.4	103.4	124.5	104.4	87.3
9111	98.1	98.5	99.5	99.4	98.5	97.5	102.4	102.8	103.0	123.7	102.8	85.1
9112	100.8	101.0	101.0	102.3	101.0	99.9	103.3	103.8	104.0	126.5	103.8	85.1
9201	100.9	100.4	99.8	101.3	100.4	99.6	104.2	104.3	103.8	128.1	104.3	84.7
9202	100.3	100.2	100.1	100.5	100.2	100.0	104.5	104.5	103.8	128.7	104.5	84.7
9203	99.6	99.3	99.0	99.6	99.3	98.9	104.1	103.8	102.7	128.3	103.8	83.7
9204	100.3	100.4	100.2	100.9	100.4	99.9	104.4	104.2	102.9	129.4	104.2	83.7
9205	98.2	97.7	97.2	98.0	97.7	97.3	102.5	101.8	100.1	126.8	101.8	81.4
9206	100.4	100.1	99.7	100.8	100.1	99.2	102.9	101.8	99.8	127.9	101.8	80.8
9207	98.3	97.3	96.3	97.6	97.3	96.9	101.2	99.1	96.0	124.9	99.1	78.3
9208	101.8	102.9	104.2	103.4	102.9	102.6	103.0	102.0	100.0	129.1	102.0	80.3
9209	99.4	99.4	99.7	99.6	99.4	99.3	102.3	101.4	99.8	128.5	101.4	79.7
9210	98.3	98.5	99.0	99.1	98.5	97.8	100.6	99.9	98.8	127.4	99.9	78.0
9211	99.3	99.0	99.0	99.2	99.0	98.7	99.9	98.9	97.7	126.4	98.9	77.0
9212	98.2	98.6	99.0	99.1	98.6	98.0	98.1	97.5	96.7	125.3	97.5	75.4
9301	101.8	100.9	99.9	101.4	100.9	100.5	99.8	98.4	96.7	127.1	98.4	75.8
9302	102.3	102.8	103.2	103.1	102.8	102.6	102.1	101.2	99.8	131.1	101.2	77.7
9303	100.3	100.6	100.8	100.9	100.6	100.2	102.4	101.8	100.6	132.3	101.8	77.9
9304	99.1	98.5	97.8	98.7	98.5	98.3	101.5	100.3	98.4	130.5	100.3	76.6
9305	99.7	99.3	98.8	99.4	99.3	99.2	101.2	99.6	97.3	129.7	99.6	76.0
9306	99.0	98.3	97.3	98.4	98.3	98.1	100.1	97.8	94.7	127.7	97.8	74.6
9307	99.5	98.8	98.0	99.0	98.8	98.6	99.6	96.7	92.8	126.5	96.7	73.5
9308	102.1	103.8	105.6	104.9	103.8	102.9	101.7	100.4	98.0	132.7	100.4	75.6
9309	101.6	102.3	102.9	102.9	102.3	101.7	103.4	102.6	100.8	136.5	102.6	76.9
9310	101.5	99.9	99.7	100.5	99.9	99.2	104.9	102.5	100.5	137.2	102.5	76.3
9311	99.2	99.3	100.0	99.8	99.3	98.9	104.0	101.8	100.6	136.9	101.8	75.4
9312	99.7	99.5	99.6	100.1	99.5	98.9	103.7	101.3	100.1	137.0	101.3	74.6
9401	103.8	104.5	104.9	105.6	104.5	103.6	107.7	105.8	105.0	144.7	105.8	77.4

**2a**  
**YEARLY LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Women's Shoes

Province: Ontario

Year	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column					
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR
8901	98.4	96.9	95.4	97.5	96.9	96.2	98.4	96.9	95.4	97.5	96.9	96.2
8902	98.7	97.9	97.2	98.4	97.9	97.4	98.7	97.9	97.2	98.4	97.9	97.4
8903	99.5	98.9	98.5	99.4	98.9	98.3	99.5	98.9	98.5	99.4	98.9	98.3
8904	101.0	100.2	99.1	100.5	100.2	99.8	101.0	100.2	99.1	100.5	100.2	99.8
8905	101.5	100.7	99.7	101.1	100.7	100.3	101.5	100.7	99.7	101.1	100.7	100.3
8906	100.9	100.1	99.1	100.5	100.1	99.6	100.9	100.1	99.1	100.5	100.1	99.6
8907	98.2	95.2	91.7	96.6	95.2	93.3	98.2	95.2	91.7	96.6	95.2	93.3
8908	98.1	95.2	91.8	96.9	95.2	92.8	98.1	95.2	91.8	96.9	95.2	92.8
8909	98.7	96.8	94.9	98.2	96.8	95.0	98.7	96.8	94.9	98.2	96.8	95.0
8910	97.0	96.4	94.6	98.1	96.4	94.2	97.0	96.4	94.6	98.1	96.4	94.2
8911	95.9	94.2	91.4	96.3	94.2	91.5	95.9	94.2	91.4	96.3	94.2	91.5
8912	94.8	93.6	92.0	95.7	93.6	90.8	94.8	93.6	92.0	95.7	93.6	90.8
9001	99.1	97.7	96.2	98.5	97.7	96.9	93.9	91.5	88.4	94.3	91.5	88.0
9002	102.5	103.2	103.7	104.3	103.2	102.1	97.1	96.6	95.4	99.9	96.6	92.8
9003	102.7	103.7	104.7	104.7	103.7	102.6	97.4	97.0	96.3	100.2	97.0	93.3
9004	103.9	105.7	107.9	106.5	105.7	105.1	98.5	98.9	99.2	101.9	98.9	95.5
9005	103.2	104.4	105.9	105.5	104.4	103.4	97.8	97.7	97.5	101.0	97.7	94.0
9006	104.8	106.3	107.7	107.1	106.3	105.7	99.4	99.5	99.1	102.5	99.5	96.0
9007	103.3	104.6	105.8	106.3	104.6	102.8	97.9	97.9	97.3	101.7	97.9	93.4
9008	105.9	108.1	110.2	109.4	108.1	106.9	100.4	101.2	101.4	104.7	101.2	97.2
9009	108.3	110.2	112.1	111.3	110.2	109.2	102.7	103.2	103.1	106.6	103.2	99.2
9010	110.0	111.1	112.2	112.5	111.1	109.9	104.3	104.0	103.2	107.7	104.0	99.8
9011	110.0	110.5	110.9	111.9	110.5	109.1	104.3	103.4	102.1	107.2	103.4	99.1
9012	108.9	109.1	109.4	110.7	109.1	107.6	103.3	102.1	100.6	105.9	102.1	97.8
9101	101.8	101.6	100.6	102.5	101.6	100.7	105.2	103.7	101.2	108.6	103.7	98.4
9102	102.9	103.1	102.5	103.8	103.1	102.4	106.2	105.2	103.2	109.9	105.2	100.1
9103	104.3	105.4	106.2	105.9	105.4	104.9	107.8	107.6	106.9	112.2	107.6	102.6
9104	104.7	105.6	106.1	106.2	105.6	105.0	108.1	107.8	106.7	112.5	107.8	102.7
9105	103.9	104.3	104.2	104.8	104.3	103.7	107.3	106.5	104.9	111.1	106.5	101.4
9106	103.1	103.4	103.4	104.3	103.4	102.6	106.5	105.6	104.1	110.5	105.6	100.3
9107	102.1	101.5	100.2	102.6	101.5	100.5	105.5	103.7	100.9	108.7	103.7	98.3
9108	102.3	102.5	102.3	103.5	102.5	101.5	105.6	104.6	103.0	109.7	104.6	99.2
9109	102.2	102.5	102.5	103.4	102.5	101.6	105.5	104.6	103.1	109.6	104.6	99.3
9110	100.6	101.7	102.2	103.0	101.7	100.5	103.9	103.9	102.9	109.1	103.9	98.2
9111	98.7	100.2	101.8	101.7	100.2	98.7	102.0	102.3	102.4	107.7	102.3	96.5
9112	99.5	101.2	102.8	103.2	101.2	99.2	102.8	103.3	103.4	109.3	103.3	97.0
9201	100.9	100.4	99.8	101.3	100.4	99.6	103.8	103.8	103.2	110.7	103.8	96.5
9202	101.2	100.7	99.9	101.8	100.7	99.6	104.1	104.0	103.3	111.3	104.0	96.5
9203	100.8	100.0	98.8	101.5	100.0	98.3	103.6	103.3	102.2	110.9	103.3	95.4
9204	101.1	100.4	99.0	101.7	100.4	99.0	104.0	103.7	102.4	111.2	103.7	96.0
9205	99.1	97.8	96.0	99.4	97.8	96.3	101.9	101.1	99.3	108.6	101.1	93.4
9206	99.5	97.9	95.7	99.8	97.9	95.9	102.3	101.1	99.0	109.1	101.1	93.0
9207	98.2	96.1	93.7	98.0	96.1	94.2	101.0	99.3	96.9	107.1	99.3	91.4
9208	99.7	98.3	96.3	100.4	98.3	96.2	102.5	101.6	99.6	109.8	101.6	93.3
9209	99.2	98.0	96.6	100.0	98.0	96.0	102.0	101.2	99.9	109.3	101.2	93.1
9210	97.4	96.4	95.5	98.2	96.4	94.5	100.2	99.6	98.8	107.4	99.6	91.6
9211	96.9	95.5	94.5	97.5	95.5	93.5	99.6	98.7	97.7	106.6	98.7	90.7
9212	95.0	94.2	93.9	95.8	94.2	92.7	97.7	97.3	97.1	104.7	97.3	89.8
9301	101.8	100.9	99.9	101.4	100.9	100.5	99.4	98.2	97.0	106.2	98.2	90.3
9302	104.0	103.8	103.1	104.3	103.8	103.4	101.7	101.0	100.2	109.1	101.0	92.9
9303	104.4	104.4	104.0	105.2	104.4	103.6	102.0	101.6	101.0	110.1	101.6	93.0
9304	103.5	102.8	101.8	103.6	102.8	102.1	101.1	100.1	98.8	108.4	100.1	91.7
9305	103.1	102.1	100.6	102.9	102.1	101.4	100.8	99.4	97.7	107.7	99.4	91.1
9306	102.1	100.4	97.9	101.1	100.4	99.6	99.8	97.7	95.1	105.8	97.7	89.5
9307	101.5	99.2	96.0	100.1	99.2	98.2	99.2	96.5	93.2	104.8	96.5	88.2
9308	103.7	103.0	101.3	103.9	103.0	102.0	101.3	100.2	98.4	108.8	100.2	91.6
9309	105.4	105.3	104.2	106.4	105.3	104.2	103.0	102.5	101.2	111.4	102.5	93.6
9310	106.9	105.1	103.9	106.7	105.1	103.7	104.5	102.3	100.9	111.7	102.3	93.1
9311	106.0	104.5	104.0	106.1	104.5	102.9	103.6	101.7	101.0	111.0	101.7	92.4
9312	105.7	103.9	103.5	106.0	103.9	101.9	103.3	101.1	100.5	110.9	101.1	91.5
9401	103.8	104.5	104.9	105.6	104.5	103.6	107.2	105.6	105.4	117.1	105.6	94.8



**3a**  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Women's Shoes

Province: Ontario

Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901		98.5	96.9	95.4	97.5	96.9	96.2	98.5	96.9	95.4	97.5	96.9	96.2
8902		98.7	97.9	97.2	98.4	97.9	97.4	98.7	97.9	97.2	98.4	97.9	97.4
8903		99.5	98.9	98.5	99.5	98.9	98.3	99.5	98.9	98.5	99.5	98.9	98.3
8904		101.0	100.2	99.1	100.5	100.2	99.8	101.0	100.2	99.1	100.5	100.2	99.8
8905		101.5	100.7	99.7	101.1	100.7	100.3	101.5	100.7	99.7	101.1	100.7	100.3
8906		100.9	100.1	99.1	100.5	100.1	99.6	100.9	100.1	99.1	100.5	100.1	99.6
8907		98.2	95.2	91.7	96.6	95.2	93.4	98.2	95.2	91.7	96.6	95.2	93.4
8908		98.1	95.2	91.8	96.9	95.2	92.8	98.1	95.2	91.8	96.9	95.2	92.8
8909		98.7	96.8	94.9	98.2	96.8	95.0	98.7	96.8	94.9	98.2	96.8	95.0
8910		97.0	96.4	94.6	98.1	96.4	94.2	97.0	96.4	94.6	98.1	96.4	94.2
8911		95.9	94.2	91.4	96.3	94.2	91.5	95.9	94.2	91.4	96.3	94.2	91.5
8912		94.8	93.6	92.0	95.7	93.6	90.9	94.8	93.6	92.0	95.7	93.6	90.9
9001		93.8	91.3	88.3	93.5	91.3	88.8	93.8	91.3	88.3	93.5	91.3	88.8
9002		97.1	96.6	95.4	98.3	96.6	94.5	97.1	96.6	95.4	98.3	96.6	94.5
9003		97.6	97.3	96.5	98.9	97.3	95.3	97.6	97.3	96.5	98.9	97.3	95.3
9004		98.8	99.3	99.6	100.5	99.3	97.9	98.8	99.3	99.6	100.5	99.3	97.9
9005		98.1	98.0	97.7	99.3	98.0	96.6	98.1	98.0	97.7	99.3	98.0	96.6
9006		99.8	100.0	99.4	101.6	100.0	98.0	99.8	100.0	99.4	101.6	100.0	98.0
9007		98.2	98.2	97.6	99.7	98.2	96.4	98.2	98.2	97.6	99.7	98.2	96.4
9008		100.9	101.8	101.9	103.4	101.8	100.0	100.9	101.8	101.9	103.4	101.8	100.0
9009		103.4	103.9	103.7	105.6	103.9	102.0	103.4	103.9	103.7	105.6	103.9	102.0
9010		105.4	105.0	103.9	106.9	105.0	102.9	105.4	105.0	103.9	106.9	105.0	102.9
9011		105.2	104.2	102.6	106.1	104.2	101.9	105.2	104.2	102.6	106.1	104.2	101.9
9012		104.2	102.8	101.1	104.9	102.8	100.4	104.2	102.8	101.1	104.9	102.8	100.4
9101		106.0	104.3	101.6	106.5	104.3	102.0	106.0	104.3	101.6	106.5	104.3	102.0
9102		107.2	105.9	103.6	108.1	105.9	103.7	107.2	105.9	103.6	108.1	105.9	103.7
9103		108.8	108.5	107.5	110.3	108.5	106.5	108.8	108.5	107.5	110.3	108.5	106.5
9104		109.2	108.7	107.4	110.6	108.7	106.6	109.2	108.7	107.4	110.6	108.7	106.6
9105		108.3	107.3	105.4	109.2	107.3	105.2	108.3	107.3	105.4	109.2	107.3	105.2
9106		107.4	106.3	104.6	108.7	106.3	103.8	107.4	106.3	104.6	108.7	106.3	103.8
9107		106.3	104.3	101.2	106.8	104.3	101.5	106.3	104.3	101.2	106.8	104.3	101.5
9108		106.5	105.3	103.4	107.7	105.3	102.6	106.5	105.3	103.4	107.7	105.3	102.6
9109		106.4	105.3	103.5	107.3	105.3	103.2	106.4	105.3	103.5	107.3	105.3	103.2
9110		103.6	103.8	102.9	105.6	103.8	101.8	103.6	103.8	102.9	105.6	103.8	101.8
9111		101.2	102.0	102.4	104.5	102.0	99.0	101.2	102.0	102.4	104.5	102.0	99.0
9112		102.2	103.1	103.5	106.1	103.1	99.9	102.2	103.1	103.5	106.1	103.1	99.9
9201		103.2	103.6	103.2	106.1	103.6	100.9	103.2	103.6	103.2	106.1	103.6	100.9
9202		103.5	103.8	103.3	106.1	103.8	101.4	103.5	103.8	103.3	106.1	103.8	101.4
9203		103.0	103.0	102.2	105.1	103.0	100.9	103.0	103.0	102.2	105.1	103.0	100.9
9204		103.4	103.5	102.4	105.6	103.5	101.3	103.4	103.5	102.4	105.6	103.5	101.3
9205		101.3	101.0	99.6	103.4	101.0	98.4	101.3	101.0	99.6	103.4	101.0	98.4
9206		101.7	101.0	99.3	103.3	101.0	98.6	101.7	101.0	99.3	103.3	101.0	98.6
9207		99.5	98.2	96.3	100.5	98.2	95.9	99.5	98.2	96.3	100.5	98.2	95.9
9208		101.1	100.6	99.2	102.9	100.6	98.2	101.1	100.6	99.2	102.9	100.6	98.2
9209		101.1	100.6	99.6	103.0	100.6	98.1	101.1	100.6	99.6	103.0	100.6	98.1
9210		99.1	98.8	98.4	101.1	98.8	96.5	99.1	98.8	98.4	101.1	98.8	96.5
9211		98.5	97.8	97.4	100.4	97.8	95.1	98.5	97.8	97.4	100.4	97.8	95.1
9212		96.4	96.4	96.7	99.2	96.4	93.4	96.4	96.4	96.7	99.2	96.4	93.4
9301		98.3	97.2	96.4	100.0	97.2	94.5	98.3	97.2	96.4	100.0	97.2	94.5
9302		100.7	100.2	99.5	102.8	100.2	97.7	100.7	100.2	99.5	102.8	100.2	97.7
9303		101.0	100.6	100.1	103.0	100.6	98.3	101.0	100.6	100.1	103.0	100.6	98.3
9304		99.9	98.8	97.4	101.3	98.8	96.2	99.9	98.8	97.4	101.3	98.8	96.2
9305		99.8	98.5	97.0	101.1	98.5	96.0	99.8	98.5	97.0	101.1	98.5	96.0
9306		98.7	96.8	94.5	99.5	96.8	94.1	98.7	96.8	94.5	99.5	96.8	94.1
9307		98.0	95.3	92.2	98.1	95.3	92.6	98.0	95.3	92.2	98.1	95.3	92.6
9308		100.4	99.5	97.9	102.3	99.5	96.6	100.4	99.5	97.9	102.3	99.5	96.6
9309		102.9	102.9	102.1	105.1	102.9	100.5	102.9	102.9	102.1	105.1	102.9	100.5
9310		106.5	104.0	102.5	106.8	104.0	101.4	106.5	104.0	102.5	106.8	104.0	101.4
9311		105.4	102.8	101.5	106.5	102.8	99.3	105.4	102.8	101.5	106.5	102.8	99.3
9312		105.1	102.4	101.4	106.0	102.4	99.3	105.1	102.4	101.4	106.0	102.4	99.3
9401		103.9	104.5	104.9	105.6	104.5	103.7	103.9	104.5	104.9	105.6	104.5	103.7

**1b**  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Women's Shoes

Province: Ontario

Year	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column					
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR
8901	99.4	97.7	95.7	98.3	97.7	97.1	99.4	97.7	95.7	98.3	97.7	97.1
8902	100.3	101.3	102.5	101.9	101.3	100.7	99.7	99.0	98.1	100.2	99.0	97.7
8903	100.5	100.5	100.7	101.0	100.5	100.0	100.2	99.5	98.8	101.1	99.5	97.8
8904	100.6	100.3	99.7	100.5	100.3	100.1	100.8	99.8	98.4	101.6	99.8	97.9
8905	100.9	100.9	101.0	101.1	100.9	100.8	101.7	100.7	99.4	102.7	100.7	98.7
8906	99.3	99.2	99.3	99.3	99.2	99.1	100.9	99.9	98.7	102.0	99.9	97.7
8907	98.4	96.3	93.2	96.8	96.3	95.6	99.3	96.2	92.0	98.8	96.2	93.4
8908	100.0	100.1	100.3	100.7	100.1	99.5	99.3	96.3	92.3	99.5	96.3	92.9
8909	100.3	101.4	103.0	103.0	101.4	99.9	99.6	97.6	95.1	102.5	97.6	92.8
8910	96.6	97.7	98.0	98.9	97.7	96.1	96.2	95.3	93.3	101.4	95.3	89.3
8911	98.8	97.8	97.1	98.1	97.8	97.5	95.0	93.2	90.5	99.4	93.2	87.0
8912	98.6	99.3	100.7	99.9	99.3	98.6	93.7	92.5	91.2	99.3	92.5	85.8
9001	99.2	97.9	96.7	98.7	97.9	97.1	92.9	90.6	88.2	98.0	90.6	83.4
9002	104.0	106.8	109.7	108.2	106.8	105.4	96.6	96.7	96.7	106.1	96.7	87.9
9003	100.0	99.3	98.4	99.7	99.3	99.0	96.7	96.1	95.2	105.7	96.1	87.0
9004	101.3	102.4	103.7	102.8	102.4	102.0	97.9	98.4	98.7	108.7	98.4	88.7
9005	99.0	98.2	97.3	98.5	98.2	97.8	97.0	96.6	96.1	107.1	96.6	86.8
9006	102.0	102.3	102.0	102.9	102.3	101.7	98.9	98.8	98.0	110.2	98.8	88.3
9007	98.6	99.0	100.2	99.8	99.0	98.2	97.5	97.9	98.3	110.0	97.9	86.7
9008	102.4	102.7	102.4	103.5	102.7	101.9	99.8	100.5	100.6	113.9	100.5	88.4
9009	102.8	102.4	101.9	102.7	102.4	102.1	102.6	102.9	102.5	116.9	102.9	90.2
9010	102.1	101.0	99.9	101.4	101.0	100.7	104.7	103.9	102.4	118.5	103.9	90.8
9011	100.3	99.8	99.7	100.2	99.8	99.5	105.0	103.8	102.1	118.7	103.8	90.4
9012	99.3	99.0	99.0	99.5	99.0	98.4	104.2	102.7	101.1	118.2	102.7	89.0
9101	101.7	101.4	100.3	102.6	101.4	100.3	106.0	104.2	101.4	121.2	104.2	89.2
9102	101.0	101.2	101.2	101.4	101.2	101.0	107.0	105.4	102.7	122.9	105.4	90.1
9103	101.9	103.1	105.1	103.4	103.1	102.9	109.0	108.8	107.9	127.1	108.8	92.7
9104	100.7	101.0	101.4	101.3	101.0	100.7	109.8	109.8	109.4	128.7	109.8	93.4
9105	99.1	98.4	97.6	98.6	98.4	98.2	108.8	108.1	106.7	126.9	108.1	91.7
9106	99.1	99.0	99.0	99.4	99.0	98.6	107.8	106.9	105.7	126.1	106.9	90.4
9107	98.9	98.1	96.9	98.5	98.1	97.7	106.6	104.9	102.4	124.1	104.9	88.3
9108	100.4	101.1	101.7	101.3	101.1	100.9	107.1	106.0	104.2	125.7	106.0	89.1
9109	99.3	99.5	100.0	100.2	99.5	98.8	106.3	105.5	104.3	126.0	105.5	88.0
9110	97.0	98.3	99.3	99.0	98.3	97.6	103.1	103.7	103.5	124.7	103.7	85.9
9111	97.6	97.9	99.0	99.0	97.9	96.8	100.5	101.5	102.5	123.5	101.5	83.1
9112	100.9	101.0	100.7	102.4	101.0	99.7	101.5	102.5	103.2	126.4	102.5	82.8
9201	102.4	101.9	101.0	102.7	101.9	101.1	103.9	104.4	104.2	129.8	104.4	83.7
9202	100.5	100.6	100.6	100.9	100.6	100.3	104.4	105.1	104.8	131.0	105.1	84.0
9203	99.3	98.8	98.2	99.2	98.8	98.3	103.7	103.8	102.9	130.0	103.8	82.6
9204	98.9	98.9	98.8	99.2	98.9	98.5	102.6	102.7	101.7	129.0	102.7	81.4
9205	99.1	98.6	98.0	98.9	98.6	98.4	101.7	101.3	99.7	127.6	101.3	80.0
9206	99.2	98.7	98.5	99.4	98.7	97.9	100.8	100.0	98.2	126.8	100.0	78.4
9207	98.7	98.2	98.0	98.5	98.2	98.0	99.5	98.2	96.3	124.9	98.2	76.8
9208	101.7	102.5	103.0	102.9	102.5	102.1	101.1	100.6	99.2	128.5	100.6	78.4
9209	100.0	100.0	100.4	100.1	100.0	99.8	101.1	100.6	99.6	128.7	100.6	78.2
9210	98.0	98.2	98.8	98.9	98.2	97.4	99.1	98.8	98.4	127.3	98.8	76.2
9211	99.4	99.0	98.9	99.3	99.0	98.7	98.5	97.8	97.4	126.4	97.8	75.2
9212	97.9	98.5	99.3	99.2	98.5	97.8	96.4	96.4	96.7	125.4	96.4	73.6
9301	101.9	100.9	99.7	101.5	100.9	100.3	98.3	97.2	96.4	127.2	97.2	73.8
9302	102.5	103.1	103.3	103.4	103.1	102.8	100.7	100.2	99.5	131.5	100.2	75.8
9303	100.3	100.4	100.5	100.9	100.4	100.0	101.0	100.6	100.1	132.7	100.6	75.8
9304	98.9	98.1	97.3	98.3	98.1	97.9	99.9	98.8	97.4	130.5	98.8	74.3
9305	99.9	99.8	99.6	99.8	99.8	99.8	99.8	98.5	97.0	130.2	98.5	74.1
9306	98.9	98.2	97.4	98.4	98.2	98.0	98.7	96.7	94.5	128.1	96.7	72.6
9307	99.3	98.5	97.6	98.8	98.5	98.2	98.0	95.3	92.2	126.5	95.3	71.3
9308	102.5	104.4	106.2	105.8	104.4	103.3	100.4	99.5	97.9	133.8	99.5	73.6
9309	102.4	103.3	104.3	104.0	103.3	102.7	102.9	102.8	102.1	139.2	102.8	75.6
9310	103.5	101.1	100.5	101.7	101.1	100.6	106.5	104.0	102.5	141.5	104.0	76.1
9311	99.0	98.8	99.0	99.1	98.8	98.5	105.4	102.8	101.5	140.3	102.8	75.0
9312	99.7	99.6	99.9	100.4	99.6	99.0	105.1	102.4	101.4	140.8	102.4	74.2
9401	102.7	104.0	105.1	104.8	104.0	103.3	108.0	106.5	106.6	147.5	106.5	76.6

**2b**  
**YEARLY LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Women's Shoes

Province: Ontario

Year	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column					
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR
8901	99.4	97.7	95.7	98.3	97.7	97.1	99.4	97.7	95.7	98.3	97.7	97.1
8902	99.7	99.0	98.1	99.3	99.0	98.6	99.7	99.0	98.1	99.3	99.0	98.6
8903	100.2	99.5	98.8	100.0	99.5	98.9	100.2	99.5	98.8	100.0	99.5	98.9
8904	100.8	99.8	98.4	100.2	99.8	99.3	100.8	99.8	98.4	100.2	99.8	99.3
8905	101.7	100.7	99.4	101.2	100.7	100.2	101.7	100.7	99.4	101.2	100.7	100.2
8906	100.9	99.9	98.7	100.5	99.9	99.3	100.9	99.9	98.7	100.5	99.9	99.3
8907	99.3	96.2	92.0	97.6	96.2	94.2	99.3	96.2	92.0	97.6	96.2	94.2
8908	99.3	96.3	92.3	98.0	96.3	93.8	99.3	96.3	92.3	98.0	96.3	93.8
8909	99.6	97.6	95.1	99.0	97.6	95.6	99.6	97.6	95.1	99.0	97.6	95.6
8910	96.2	95.3	93.3	97.1	95.3	92.9	96.2	95.3	93.3	97.1	95.3	92.9
8911	95.0	93.2	90.5	95.4	93.2	90.3	95.0	93.2	90.5	95.4	93.2	90.3
8912	93.7	92.5	91.2	94.8	92.5	89.6	93.7	92.5	91.2	94.8	92.5	89.6
9001	99.2	97.9	96.7	98.7	97.9	97.1	92.9	90.6	88.2	93.5	90.6	87.0
9002	103.1	104.5	106.1	105.6	104.5	103.5	96.6	96.7	96.7	100.1	96.7	92.7
9003	103.1	103.8	104.4	105.1	103.8	102.7	96.7	96.1	95.2	99.6	96.1	92.0
9004	104.5	106.3	108.3	107.2	106.3	105.6	97.9	98.4	98.7	101.6	98.4	94.6
9005	103.4	104.4	105.4	105.6	104.4	103.3	97.0	96.6	96.1	100.1	96.6	92.6
9006	105.5	106.8	107.5	107.5	106.8	106.1	98.9	98.8	98.0	101.9	98.8	95.1
9007	104.0	105.8	107.8	107.5	105.8	104.0	97.5	97.9	98.3	101.9	97.9	93.2
9008	106.5	108.6	110.3	110.0	108.6	107.3	99.8	100.5	100.6	104.3	100.5	96.2
9009	109.4	111.2	112.4	112.3	111.2	110.1	102.6	102.9	102.5	106.5	102.9	98.7
9010	111.7	112.3	112.3	113.8	112.3	111.0	104.7	103.9	102.4	107.9	103.9	99.4
9011	112.0	112.1	112.0	113.7	112.1	110.7	105.0	103.8	102.1	107.7	103.8	99.2
9012	111.2	111.0	110.9	112.8	111.0	109.5	104.2	102.7	101.1	106.9	102.7	98.1
9101	101.7	101.4	100.3	102.6	101.4	100.3	106.0	104.2	101.4	109.6	104.2	98.4
9102	102.7	102.6	101.5	103.4	102.6	101.9	107.0	105.4	102.7	110.5	105.4	99.9
9103	104.6	105.9	106.7	106.5	105.9	105.3	109.0	108.8	107.9	113.8	108.8	103.3
9104	105.4	106.9	108.2	107.5	106.9	106.3	109.8	109.8	109.4	114.9	109.8	104.3
9105	104.4	105.2	105.6	105.8	105.2	104.6	108.8	108.1	106.7	113.1	108.1	102.6
9106	103.4	104.1	104.6	105.2	104.1	103.1	107.8	106.9	105.7	112.4	106.9	101.1
9107	102.3	102.1	101.3	103.3	102.1	100.9	106.6	104.9	102.4	110.4	104.9	99.0
9108	102.8	103.2	103.1	104.4	103.2	102.1	107.1	106.0	104.2	111.6	106.0	100.1
9109	102.0	102.7	103.1	103.7	102.7	101.6	106.3	105.5	104.3	110.9	105.5	99.6
9110	98.9	100.9	102.4	102.3	100.9	99.5	103.1	103.7	103.5	109.3	103.7	97.6
9111	96.5	98.8	101.3	100.4	98.8	97.2	100.5	101.5	102.5	107.3	101.5	95.3
9112	97.4	99.8	102.0	102.0	99.8	97.4	101.5	102.5	103.2	109.1	102.5	95.6
9201	102.4	101.9	101.0	102.7	101.9	101.1	103.9	104.4	104.2	112.0	104.4	96.6
9202	102.9	102.5	101.6	103.6	102.5	101.4	104.4	105.1	104.8	113.0	105.1	96.9
9203	102.2	101.3	99.8	103.0	101.3	99.5	103.7	103.8	102.9	112.3	103.8	95.1
9204	101.1	100.2	98.6	101.8	100.2	98.5	102.6	102.7	101.7	111.1	102.7	94.1
9205	100.2	98.8	96.6	100.4	98.8	97.1	101.7	101.3	99.7	109.5	101.3	92.8
9206	99.4	97.5	95.2	99.8	97.5	95.3	100.8	100.0	98.2	108.9	100.0	91.0
9207	98.0	95.8	93.4	97.8	95.8	93.8	99.5	98.2	96.3	106.7	98.2	89.6
9208	99.7	98.2	96.1	100.4	98.2	95.9	101.1	100.6	99.2	109.5	100.6	91.6
9209	99.7	98.2	96.5	100.3	98.2	96.0	101.1	100.6	99.6	109.3	100.6	91.8
9210	97.7	96.4	95.4	98.4	96.4	94.4	99.1	98.8	98.4	107.3	98.8	90.2
9211	97.1	95.4	94.4	97.6	95.4	93.3	98.5	97.8	97.4	106.4	97.8	89.2
9212	95.1	94.0	93.7	95.7	94.0	92.4	96.4	96.4	96.7	104.4	96.4	88.3
9301	101.9	100.9	99.7	101.5	100.9	100.3	98.3	97.2	96.4	105.9	97.2	88.6
9302	104.5	104.0	102.9	104.5	104.0	103.5	100.7	100.2	99.5	109.1	100.2	91.4
9303	104.7	104.4	103.5	105.3	104.4	103.4	101.0	100.6	100.1	109.9	100.6	91.3
9304	103.6	102.5	100.8	103.3	102.5	101.6	99.9	98.8	97.4	107.9	98.8	89.7
9305	103.5	102.2	100.3	103.2	102.2	101.3	99.8	98.5	97.0	107.7	98.5	89.4
9306	102.3	100.4	97.7	101.3	100.4	99.5	98.7	96.7	94.5	105.7	96.7	87.8
9307	101.6	98.9	95.4	100.0	98.9	97.7	98.0	95.3	92.2	104.4	95.3	86.3
9308	104.1	103.2	101.3	104.5	103.2	102.1	100.4	99.5	97.9	109.0	99.5	90.1
9309	106.7	106.7	105.6	108.0	106.7	105.5	102.9	102.8	102.1	112.7	102.8	93.2
9310	110.4	107.9	106.0	109.3	107.9	106.6	106.5	104.0	102.5	114.1	104.0	94.2
9311	109.3	106.6	105.0	108.2	106.6	105.2	105.4	102.8	101.5	112.9	102.8	92.9
9312	109.0	106.2	104.9	108.3	106.2	104.4	105.1	102.4	101.4	113.0	102.4	92.2
9401	102.7	104.0	105.1	104.8	104.0	103.3	108.0	106.5	106.6	118.4	106.5	95.2

**3b**  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Women's Shoes

Province: Ontario

Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.4	97.7	95.7	98.3	97.7	97.1	99.4	97.7	95.7	98.3	97.7	97.1
8902	99.7	99.0	98.1	99.3	99.0	98.6	99.7	99.0	98.1	99.3	99.0	98.6
8903	100.2	99.5	98.8	100.0	99.5	98.9	100.2	99.5	98.8	100.0	99.5	98.9
8904	100.8	99.8	98.4	100.2	99.8	99.3	100.8	99.8	98.4	100.2	99.8	99.3
8905	101.7	100.7	99.4	101.2	100.7	100.2	101.7	100.7	99.4	101.2	100.7	100.2
8906	101.0	99.9	98.7	100.5	99.9	99.3	101.0	99.9	98.7	100.5	99.9	99.3
8907	99.3	96.2	92.0	97.6	96.2	94.2	99.3	96.2	92.0	97.6	96.2	94.2
8908	99.3	96.3	92.3	98.0	96.3	93.8	99.3	96.3	92.3	98.0	96.3	93.8
8909	99.6	97.6	95.1	99.0	97.6	95.6	99.6	97.6	95.1	99.0	97.6	95.6
8910	96.2	95.3	93.3	97.1	95.3	93.0	96.2	95.3	93.3	97.1	95.3	93.0
8911	95.0	93.2	90.5	95.4	93.2	90.4	95.0	93.2	90.5	95.4	93.2	90.4
8912	93.7	92.5	91.2	94.8	92.5	89.6	93.7	92.5	91.2	94.8	92.5	89.6
9001	92.9	90.6	88.2	92.8	90.6	88.0	92.9	90.6	88.2	92.8	90.6	88.0
9002	96.6	96.7	96.7	98.4	96.7	94.6	96.6	96.7	96.7	98.4	96.7	94.6
9003	96.7	96.1	95.2	97.8	96.1	94.0	96.7	96.1	95.2	97.8	96.1	94.0
9004	97.9	98.4	98.7	99.6	98.4	96.9	97.9	98.4	98.7	99.6	98.4	96.9
9005	97.0	96.6	96.1	97.9	96.6	95.1	97.0	96.6	96.1	97.9	96.6	95.1
9006	98.9	98.8	98.1	100.5	98.8	96.7	98.9	98.8	98.1	100.5	98.8	96.7
9007	97.5	97.9	98.3	99.3	97.9	96.3	97.5	97.9	98.3	99.3	97.9	96.3
9008	99.8	100.5	100.6	102.2	100.5	98.6	99.8	100.5	100.6	102.2	100.5	98.6
9009	102.6	102.9	102.5	104.7	102.9	100.8	102.6	102.9	102.5	104.7	102.9	100.8
9010	104.7	103.9	102.4	106.0	103.9	101.6	104.7	103.9	102.4	106.0	103.9	101.6
9011	105.0	103.8	102.1	105.8	103.8	101.3	105.0	103.8	102.1	105.8	103.8	101.3
9012	104.2	102.7	101.1	105.0	102.7	100.2	104.2	102.7	101.1	105.0	102.7	100.2
9101	106.0	104.2	101.4	106.6	104.2	101.7	106.0	104.2	101.4	106.6	104.2	101.7
9102	107.0	105.4	102.7	107.8	105.4	102.9	107.0	105.4	102.7	107.8	105.4	102.9
9103	109.0	108.8	107.9	110.8	108.8	106.6	109.0	108.8	107.9	110.8	108.8	106.6
9104	109.8	109.8	109.4	111.8	109.8	107.7	109.8	109.8	109.4	111.8	109.8	107.7
9105	108.8	108.1	106.8	110.1	108.1	105.9	108.8	108.1	106.8	110.1	108.1	105.9
9106	107.8	107.0	105.7	109.4	107.0	104.2	107.8	107.0	105.7	109.4	107.0	104.2
9107	106.6	104.9	102.4	107.6	104.9	102.0	106.6	104.9	102.4	107.6	104.9	102.0
9108	107.1	106.0	104.2	108.8	106.0	102.9	107.1	106.0	104.2	108.8	106.0	102.9
9109	106.3	105.5	104.3	107.6	105.5	103.2	106.3	105.5	104.3	107.6	105.5	103.2
9110	103.1	103.7	103.6	105.6	103.7	101.6	103.1	103.7	103.6	105.6	103.7	101.6
9111	100.6	101.5	102.5	104.3	101.5	98.2	100.6	101.5	102.5	104.3	101.5	98.2
9112	101.5	102.5	103.2	105.9	102.5	99.0	101.5	102.5	103.2	105.9	102.5	99.0
9201	103.9	104.4	104.2	107.2	104.4	101.5	103.9	104.4	104.2	107.2	104.4	101.5
9202	104.4	105.1	104.9	107.6	105.1	102.3	104.4	105.1	104.9	107.6	105.1	102.3
9203	103.7	103.8	102.9	106.1	103.8	101.5	103.7	103.8	102.9	106.1	103.8	101.5
9204	102.6	102.7	101.7	104.9	102.7	100.3	102.6	102.7	101.7	104.9	102.7	100.3
9205	101.7	101.3	99.7	103.9	101.3	98.5	101.7	101.3	99.7	103.9	101.3	98.5
9206	100.8	100.0	98.3	102.3	100.0	97.5	100.8	100.0	98.3	102.3	100.0	97.5
9207	99.5	98.2	96.3	100.5	98.2	95.9	99.5	98.2	96.3	100.5	98.2	95.9
9208	101.1	100.6	99.2	102.9	100.6	98.2	101.1	100.6	99.2	102.9	100.6	98.2
9209	101.1	100.6	99.6	103.0	100.6	98.1	101.1	100.6	99.6	103.0	100.6	98.1
9210	99.1	98.8	98.4	101.1	98.8	96.5	99.1	98.8	98.4	101.1	98.8	96.5
9211	98.5	97.8	97.4	100.4	97.8	95.1	98.5	97.8	97.4	100.4	97.8	95.1
9212	96.4	96.4	96.7	99.2	96.4	93.4	96.4	96.4	96.7	99.2	96.4	93.4
9301	98.3	97.2	96.4	100.0	97.2	94.5	98.3	97.2	96.4	100.0	97.2	94.5
9302	100.7	100.2	99.5	102.8	100.2	97.7	100.7	100.2	99.5	102.8	100.2	97.7
9303	101.0	100.6	100.1	103.0	100.6	98.3	101.0	100.6	100.1	103.0	100.6	98.3
9304	99.9	98.8	97.4	101.3	98.8	96.2	99.9	98.8	97.4	101.3	98.8	96.2
9305	99.8	98.5	97.0	101.1	98.5	96.0	99.8	98.5	97.0	101.1	98.5	96.0
9306	98.7	96.8	94.5	99.5	96.8	94.1	98.7	96.8	94.5	99.5	96.8	94.1
9307	98.0	95.3	92.2	98.1	95.3	92.6	98.0	95.3	92.2	98.1	95.3	92.6
9308	100.4	99.5	97.9	102.3	99.5	96.6	100.4	99.5	97.9	102.3	99.5	96.6
9309	102.9	102.9	102.1	105.1	102.9	100.5	102.9	102.9	102.1	105.1	102.9	100.5
9310	106.5	104.0	102.5	106.8	104.0	101.4	106.5	104.0	102.5	106.8	104.0	101.4
9311	105.4	102.8	101.5	106.5	102.8	99.3	105.4	102.8	101.5	106.5	102.8	99.3
9312	105.1	102.4	101.4	106.0	102.4	99.3	105.1	102.4	101.4	106.0	102.4	99.3
9401	102.7	104.0	105.1	104.8	104.0	103.3	108.0	106.5	106.6	111.1	106.5	102.6

**1a**  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Milk

Province: Ontario

Year	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.2	100.2	100.1	100.2	100.2	100.1	100.1	100.1	100.0	100.1	100.1	100.1	100.0
8903	98.0	97.9	97.7	98.1	97.9	97.7	98.1	98.0	97.8	98.2	98.0	98.0	97.7
8904	104.4	104.4	104.5	104.6	104.4	104.2	102.5	102.3	102.2	102.7	102.3	101.9	
8905	100.5	100.5	100.5	100.6	100.5	100.3	103.0	102.8	102.6	103.4	102.8	102.2	
8906	100.3	100.3	100.3	100.3	100.3	100.3	103.3	103.1	103.0	103.7	103.1	102.5	
8907	99.4	99.3	99.1	99.4	99.3	99.1	102.7	102.3	102.0	103.1	102.3	101.5	
8908	98.8	98.6	98.4	98.9	98.6	98.3	101.4	100.9	100.3	102.0	100.9	99.8	
8909	102.8	103.3	103.9	103.7	103.3	103.0	104.3	104.2	104.2	105.8	104.2	102.8	
8910	103.3	103.2	103.1	103.3	103.2	103.1	107.7	107.6	107.5	109.3	107.6	106.0	
8911	99.1	99.1	99.1	99.2	99.1	99.0	106.8	106.7	106.5	108.4	106.7	105.0	
8912	100.1	100.0	100.0	100.1	100.0	100.0	106.8	106.7	106.6	108.4	106.7	105.0	
9001	99.3	99.2	99.0	99.4	99.2	98.8	106.1	105.8	105.5	107.8	105.8	103.8	
9002	100.4	100.6	100.8	100.8	100.6	100.4	106.5	106.4	106.3	108.6	106.4	104.1	
9003	99.7	99.7	99.7	99.7	99.7	99.7	106.3	106.1	106.0	108.4	106.1	103.8	
9004	100.6	100.6	100.7	100.7	100.6	100.6	106.9	106.8	106.7	109.2	106.8	104.4	
9005	100.3	100.3	100.3	100.4	100.3	100.3	107.2	107.1	107.0	109.6	107.1	104.6	
9006	98.3	98.1	98.0	98.3	98.1	97.9	105.4	105.1	104.9	107.7	105.1	102.4	
9007	99.0	98.8	98.4	98.9	98.8	98.6	104.4	103.8	103.2	106.5	103.8	101.0	
9008	100.1	100.1	100.1	100.1	100.1	100.1	104.5	103.9	103.3	106.6	103.9	101.1	
9009	108.2	107.9	107.8	108.4	107.9	107.6	113.0	112.2	111.3	115.5	112.2	108.7	
9010	100.4	100.4	100.3	100.6	100.4	100.1	113.5	112.6	111.6	116.3	112.6	108.8	
9011	99.6	99.5	99.5	99.6	99.5	99.5	113.0	112.0	111.1	115.8	112.0	108.3	
9012	98.9	98.8	98.7	98.9	98.8	98.7	111.7	110.7	109.6	114.5	110.7	106.9	
9101	98.7	98.7	98.8	98.8	98.7	98.6	110.3	109.3	108.3	113.2	109.3	105.4	
9102	100.1	100.0	99.9	100.2	100.0	99.9	110.4	109.3	108.2	113.4	109.3	105.3	
9103	103.3	103.0	102.8	103.2	103.0	102.8	114.0	112.7	111.3	117.1	112.7	108.3	
9104	97.9	98.1	98.4	98.4	98.1	97.9	111.7	110.6	109.4	115.2	110.6	105.9	
9105	98.1	98.2	98.4	98.4	98.2	98.0	109.5	108.6	107.6	113.3	108.6	103.8	
9106	99.7	99.8	100.0	100.0	99.8	99.7	109.2	108.4	107.6	113.3	108.4	103.5	
9107	102.0	102.4	102.8	102.6	102.4	102.2	111.4	111.0	110.7	116.3	111.0	105.8	
9108	99.9	99.9	99.9	99.9	99.9	99.8	111.3	110.9	110.5	116.2	110.9	105.7	
9109	97.6	97.6	97.6	97.8	97.6	97.4	108.7	108.3	107.9	113.7	108.3	102.9	
9110	101.4	101.4	101.5	101.6	101.4	101.2	110.1	109.8	109.5	115.5	109.8	104.2	
9111	102.7	102.9	103.0	103.2	102.9	102.6	113.1	113.0	112.8	119.2	113.0	106.9	
9112	98.9	99.0	99.1	99.1	99.0	98.8	111.9	111.9	111.8	118.2	111.9	105.7	
9201	100.6	100.6	100.6	100.7	100.6	100.5	112.6	112.5	112.4	118.9	112.5	106.2	
9202	100.5	100.2	99.9	100.5	100.2	99.9	113.2	112.7	112.3	119.5	112.7	106.0	
9203	95.4	95.0	94.6	95.5	95.0	94.5	108.0	107.1	106.3	114.2	107.1	100.2	
9204	101.1	101.1	101.0	101.3	101.1	100.8	109.1	108.3	107.4	115.7	108.3	101.0	
9205	101.5	101.6	101.6	101.8	101.6	101.4	110.8	110.0	109.1	117.7	110.0	102.4	
9206	100.9	100.9	100.9	101.0	100.9	100.9	111.8	111.0	110.1	118.9	111.0	103.3	
9207	100.2	100.2	100.2	100.3	100.2	100.1	112.0	111.2	110.4	119.2	111.2	103.5	
9208	99.4	99.3	99.3	99.4	99.3	99.2	111.3	110.5	109.6	118.6	110.5	102.7	
9209	102.7	103.1	103.5	103.4	103.1	102.8	114.4	113.9	113.4	122.6	113.9	105.6	
9210	101.4	101.7	102.1	102.0	101.7	101.5	116.0	115.9	115.8	125.1	115.9	107.2	
9211	100.4	100.5	100.5	100.5	100.5	100.4	116.5	116.4	116.4	125.7	116.4	107.6	
9212	100.5	100.5	100.6	100.6	100.5	100.5	117.0	117.1	117.1	126.5	117.1	108.1	
9301	99.9	99.9	99.9	100.0	99.9	99.9	117.0	117.0	117.0	126.5	117.0	108.0	
9302	100.5	100.5	100.5	100.6	100.5	100.4	117.5	117.6	117.6	127.2	117.6	108.4	
9303	99.9	100.0	100.0	100.1	100.0	99.9	117.5	117.5	117.6	127.3	117.5	108.3	
9304	99.7	99.7	99.7	99.7	99.7	99.7	117.1	117.2	117.3	127.0	117.2	107.9	
9305	98.6	98.7	98.9	98.8	98.7	98.6	115.5	115.7	115.9	125.5	115.7	106.4	
9306	99.0	99.0	99.0	99.1	99.0	99.0	114.3	114.6	114.8	124.3	114.6	105.3	
9307	100.0	99.9	99.7	100.0	99.9	99.7	114.3	114.4	114.5	124.3	114.4	105.1	
9308	99.7	99.7	99.7	99.8	99.7	99.6	113.9	114.0	114.1	124.0	114.0	104.6	
9309	100.2	100.3	100.3	100.4	100.3	100.2	114.2	114.3	114.4	124.4	114.3	104.8	
9310	100.1	100.1	100.1	100.1	100.1	100.1	114.3	114.4	114.6	124.6	114.4	104.9	
9311	99.3	99.2	99.2	99.3	99.2	99.2	113.5	113.6	113.6	123.7	113.6	104.0	
9312	98.9	98.8	98.8	99.0	98.8	98.6	112.2	112.2	112.2	122.4	112.2	102.6	
9401	101.7	101.7	101.8	101.9	101.7	101.6	114.1	114.2	114.2	124.8	114.2	104.2	

2a  
**YEARLY LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE  
CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Milk

Province: Ontario

Year Month	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column					
	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.1	100.1	100.0	100.1	100.1	100.0	100.1	100.1	100.0	100.1	100.1	100.0
8903	98.1	97.9	97.7	98.1	97.9	97.7	98.1	97.9	97.7	98.1	97.9	97.7
8904	102.5	102.4	102.2	102.4	102.4	102.3	102.5	102.4	102.2	102.4	102.4	102.3
8905	103.0	102.8	102.6	103.0	102.8	102.6	103.0	102.8	102.6	103.0	102.8	102.6
8906	103.3	103.1	103.0	103.3	103.1	103.0	103.3	103.1	103.0	103.3	103.1	103.0
8907	102.6	102.3	102.0	102.6	102.3	102.0	102.6	102.3	102.0	102.6	102.3	102.0
8908	101.6	101.1	100.6	101.4	101.1	100.9	101.6	101.1	100.6	101.4	101.1	100.9
8909	104.2	104.2	104.2	104.3	104.2	104.1	104.2	104.2	104.2	104.3	104.2	104.1
8910	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.4
8911	106.8	106.6	106.5	106.7	106.6	106.5	106.8	106.6	106.5	106.7	106.6	106.5
8912	106.8	106.6	106.5	106.7	106.6	106.5	106.8	106.6	106.5	106.7	106.6	106.5
9001	99.3	99.2	99.0	99.4	99.2	98.8	106.0	105.7	105.4	106.1	105.7	105.2
9002	99.7	99.7	99.7	99.8	99.7	99.6	106.4	106.3	106.2	106.6	106.3	106.1
9003	99.4	99.4	99.4	99.6	99.4	99.3	106.2	106.0	105.9	106.3	106.0	105.7
9004	100.1	100.1	100.1	100.2	100.1	100.0	106.8	106.7	106.6	106.9	106.7	106.5
9005	100.4	100.4	100.4	100.5	100.4	100.3	107.2	107.0	106.9	107.3	107.0	106.8
9006	98.6	98.5	98.4	98.8	98.5	98.2	105.3	105.0	104.7	105.4	105.0	104.5
9007	97.6	97.2	96.7	97.8	97.2	96.5	104.2	103.7	103.0	104.4	103.7	102.7
9008	97.7	97.3	96.8	97.9	97.3	96.6	104.3	103.8	103.1	104.5	103.8	102.8
9009	105.7	105.1	104.4	105.9	105.1	104.2	112.9	112.0	111.1	113.0	112.0	111.0
9010	106.1	105.4	104.7	106.1	105.4	104.7	113.3	112.4	111.5	113.3	112.4	111.5
9011	105.7	104.9	104.2	105.7	104.9	104.2	112.8	111.9	110.9	112.8	111.9	110.9
9012	104.6	103.8	102.9	104.6	103.8	102.9	111.6	110.6	109.5	111.6	110.6	109.6
9101	98.7	98.7	98.8	98.8	98.7	98.6	110.2	109.2	108.2	110.3	109.2	108.1
9102	98.8	98.8	98.7	98.9	98.8	98.7	110.4	109.3	108.1	110.3	109.3	108.2
9103	102.1	101.8	101.5	102.0	101.8	101.6	114.0	112.6	111.2	113.8	112.6	111.4
9104	99.9	99.9	99.8	100.1	99.9	99.6	111.6	110.5	109.4	111.8	110.5	109.2
9105	98.0	98.1	98.2	98.5	98.1	97.7	109.4	108.5	107.6	109.9	108.5	107.1
9106	97.7	97.9	98.1	98.2	97.9	97.6	109.1	108.3	107.5	109.6	108.3	107.0
9107	99.6	100.1	100.8	100.7	100.1	99.6	111.2	110.8	110.4	112.4	110.8	109.2
9108	99.4	99.9	100.6	100.5	99.9	99.4	111.0	110.6	110.2	112.1	110.6	108.9
9109	97.0	97.5	98.1	98.4	97.5	96.6	108.3	107.9	107.5	109.8	107.9	105.9
9110	98.2	98.8	99.5	100.0	98.8	97.6	109.7	109.3	109.0	111.6	109.3	107.0
9111	100.9	101.7	102.5	103.1	101.7	100.2	112.6	112.5	112.3	115.1	112.5	109.8
9112	99.7	100.6	101.5	102.1	100.6	99.0	111.3	111.3	111.2	113.9	111.3	108.6
9201	100.6	100.6	100.6	100.7	100.6	100.5	112.0	111.9	111.8	114.7	111.9	109.1
9202	101.1	100.8	100.5	101.1	100.8	100.5	112.6	112.1	111.7	115.1	112.1	109.1
9203	96.4	95.7	95.0	96.6	95.7	94.8	107.4	106.5	105.6	110.0	106.5	102.9
9204	97.4	96.7	96.0	97.7	96.7	95.6	108.5	107.6	106.7	111.3	107.6	103.8
9205	98.8	98.2	97.5	99.1	98.2	97.2	110.0	109.2	108.3	112.8	109.2	105.5
9206	99.7	99.1	98.4	100.0	99.1	98.1	111.0	110.2	109.4	113.9	110.2	106.5
9207	99.9	99.3	98.6	100.2	99.3	98.4	111.3	110.5	109.6	114.1	110.5	106.8
9208	99.3	98.6	97.9	99.5	98.6	97.7	110.6	109.7	108.8	113.4	109.7	106.0
9209	102.1	101.7	101.3	102.4	101.7	101.1	113.7	113.2	112.6	116.6	113.2	109.7
9210	103.5	103.5	103.5	103.8	103.5	103.2	115.3	115.1	115.0	118.2	115.1	112.0
9211	104.0	104.0	104.0	104.3	104.0	103.7	115.8	115.7	115.6	118.8	115.7	112.6
9212	104.5	104.6	104.7	104.8	104.6	104.3	116.3	116.4	116.4	119.4	116.4	113.3
9301	99.9	99.9	99.9	100.0	99.9	99.9	116.3	116.3	116.3	119.4	116.3	113.1
9302	100.4	100.4	100.4	100.5	100.4	100.3	116.9	116.9	116.9	120.1	116.9	113.6
9303	100.4	100.4	100.4	100.5	100.4	100.3	116.8	116.8	116.8	120.0	116.8	113.6
9304	100.1	100.1	100.1	100.2	100.1	100.1	116.5	116.5	116.5	119.6	116.5	113.3
9305	98.7	98.8	99.0	99.0	98.8	98.7	114.8	115.0	115.2	118.2	115.0	111.8
9306	97.7	97.9	98.0	98.1	97.9	97.6	113.7	113.9	114.1	117.2	113.9	110.5
9307	97.7	97.7	97.7	98.0	97.7	97.3	113.6	113.7	113.7	117.1	113.7	110.2
9308	97.3	97.3	97.3	97.7	97.3	96.9	113.1	113.2	113.3	116.6	113.2	109.8
9309	97.5	97.6	97.6	97.8	97.6	97.3	113.4	113.5	113.6	116.8	113.5	110.2
9310	97.6	97.7	97.8	97.9	97.7	97.4	113.5	113.7	113.8	117.0	113.7	110.3
9311	96.8	96.9	96.9	97.2	96.9	96.5	112.7	112.7	112.8	116.1	112.7	109.3
9312	95.8	95.8	95.8	96.2	95.8	95.4	111.4	111.4	111.5	114.8	111.4	108.0
9401	101.7	101.7	101.8	101.9	101.7	101.6	113.3	113.4	113.4	117.0	113.4	109.7

**3a**  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM BILATERALLY MATCHED SAMPLES**

Commodity: Milk

Province: Ontario

Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1
8903	98.1	97.9	97.8	98.1	97.9	97.8	98.1	97.9	97.8	98.1	97.9	97.8	97.8
8904	102.5	102.4	102.2	102.4	102.4	102.3	102.5	102.4	102.2	102.4	102.4	102.3	102.3
8905	103.0	102.8	102.6	103.0	102.8	102.6	103.0	102.8	102.6	103.0	102.8	102.6	102.6
8906	103.3	103.1	103.0	103.3	103.1	103.0	103.3	103.1	103.0	103.3	103.1	103.0	103.0
8907	102.6	102.3	102.0	102.6	102.3	102.0	102.6	102.3	102.0	102.6	102.3	102.0	102.0
8908	101.6	101.1	100.6	101.4	101.1	100.9	101.6	101.1	100.6	101.4	101.1	100.9	100.9
8909	104.2	104.2	104.2	104.3	104.2	104.1	104.2	104.2	104.2	104.3	104.2	104.1	104.1
8910	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.4	107.4
8911	106.8	106.6	106.5	106.7	106.6	106.5	106.8	106.6	106.5	106.7	106.6	106.5	106.5
8912	106.8	106.6	106.5	106.7	106.6	106.5	106.8	106.6	106.5	106.7	106.6	106.5	106.5
9001	106.0	105.7	105.3	105.9	105.7	105.3	106.0	105.7	105.3	105.9	105.7	105.3	105.3
9002	106.4	106.3	106.2	106.4	106.3	106.2	106.4	106.3	106.2	106.4	106.3	106.2	106.2
9003	106.1	106.0	105.8	106.1	106.0	105.8	106.1	106.0	105.8	106.1	106.0	105.8	105.8
9004	106.8	106.7	106.5	106.8	106.7	106.6	106.8	106.7	106.5	106.8	106.7	106.6	106.6
9005	107.2	107.1	106.9	107.2	107.1	106.9	107.2	107.1	106.9	107.2	107.1	106.9	106.9
9006	105.4	105.1	104.8	105.4	105.1	104.8	105.4	105.1	104.8	105.4	105.1	104.8	104.8
9007	104.3	103.7	103.0	104.3	103.7	103.0	104.3	103.7	103.0	104.3	103.7	103.0	103.0
9008	104.5	103.8	103.1	104.4	103.8	103.1	104.5	103.8	103.1	104.4	103.8	103.1	103.1
9009	113.2	112.4	111.5	113.2	112.4	111.6	113.2	112.4	111.5	113.2	112.4	111.6	111.6
9010	113.6	112.7	111.7	113.4	112.7	111.9	113.6	112.7	111.7	113.4	112.7	111.9	111.9
9011	113.0	112.1	111.1	112.8	112.1	111.3	113.0	112.1	111.1	112.8	112.1	111.3	111.3
9012	111.8	110.8	109.8	111.6	110.8	110.1	111.8	110.8	109.8	111.6	110.8	110.1	110.1
9101	110.6	109.6	108.6	110.3	109.6	108.9	110.6	109.6	108.6	110.3	109.6	108.9	108.9
9102	110.6	109.5	108.4	110.3	109.5	108.7	110.6	109.5	108.4	110.3	109.5	108.7	108.7
9103	114.2	112.8	111.5	114.0	112.8	111.7	114.2	112.8	111.5	114.0	112.8	111.7	111.7
9104	111.7	110.6	109.6	111.5	110.6	109.8	111.7	110.6	109.6	111.5	110.6	109.8	109.8
9105	109.5	108.6	107.7	109.4	108.6	107.9	109.5	108.6	107.7	109.4	108.6	107.9	107.9
9106	109.3	108.5	107.7	109.2	108.5	107.8	109.3	108.5	107.7	109.2	108.5	107.8	107.8
9107	111.4	111.0	110.6	111.5	111.0	110.5	111.4	111.0	110.6	111.5	111.0	110.5	110.5
9108	111.1	110.7	110.3	111.2	110.7	110.3	111.1	110.7	110.3	111.2	110.7	110.3	110.3
9109	108.3	107.9	107.6	108.4	107.9	107.5	108.3	107.9	107.6	108.4	107.9	107.5	107.5
9110	109.6	109.2	108.9	109.7	109.2	108.7	109.6	109.2	108.9	109.7	109.2	108.7	108.7
9111	112.6	112.4	112.2	113.0	112.4	111.8	112.6	112.4	112.2	113.0	112.4	111.8	111.8
9112	111.1	111.1	111.0	111.6	111.1	110.5	111.1	111.1	111.0	111.6	111.1	110.5	110.5
9201	111.8	111.7	111.6	112.3	111.7	111.2	111.8	111.7	111.6	112.3	111.7	111.2	111.2
9202	112.4	112.0	111.6	112.5	112.0	111.4	112.4	112.0	111.6	112.5	112.0	111.4	111.4
9203	107.3	106.5	105.6	107.2	106.5	105.7	107.3	106.5	105.6	107.2	106.5	105.7	105.7
9204	108.5	107.6	106.7	108.3	107.6	106.8	108.5	107.6	106.7	108.3	107.6	106.8	106.8
9205	110.1	109.3	108.5	110.0	109.3	108.6	110.1	109.3	108.5	110.0	109.3	108.6	108.6
9206	111.2	110.5	109.6	111.2	110.5	109.7	111.2	110.5	109.6	111.2	110.5	109.7	109.7
9207	111.2	110.4	109.5	111.1	110.4	109.6	111.2	110.4	109.5	111.1	110.4	109.6	109.6
9208	110.4	109.5	108.6	110.3	109.5	108.7	110.4	109.5	108.6	110.3	109.5	108.7	108.7
9209	113.2	112.7	112.1	113.4	112.7	111.9	113.2	112.7	112.1	113.4	112.7	111.9	111.9
9210	115.1	114.9	114.8	115.4	114.9	114.5	115.1	114.9	114.8	115.4	114.9	114.5	114.5
9211	115.3	115.2	115.1	115.5	115.2	114.8	115.3	115.2	115.1	115.5	115.2	114.8	114.8
9212	116.2	116.3	116.3	116.7	116.3	115.8	116.2	116.3	116.3	116.7	116.3	115.8	115.8
9301	116.2	116.2	116.2	116.6	116.2	115.8	116.2	116.2	116.2	116.6	116.2	115.8	115.8
9302	116.8	116.8	116.8	117.2	116.8	116.3	116.8	116.8	116.8	117.2	116.8	116.3	116.3
9303	116.8	116.8	116.8	117.2	116.8	116.3	116.8	116.8	116.8	117.2	116.8	116.3	116.3
9304	116.4	116.4	116.4	116.8	116.4	116.0	116.4	116.4	116.4	116.8	116.4	116.0	116.0
9305	114.7	114.9	115.1	115.4	114.9	114.5	114.7	114.9	115.1	115.4	114.9	114.5	114.5
9306	113.6	113.8	113.9	114.4	113.8	113.1	113.6	113.8	113.9	114.4	113.8	113.1	113.1
9307	113.0	113.1	113.2	113.8	113.1	112.3	113.0	113.1	113.2	113.8	113.1	112.3	112.3
9308	112.5	112.6	112.7	113.4	112.6	111.8	112.5	112.6	112.7	113.4	112.6	111.8	111.8
9309	112.7	112.9	113.0	113.6	112.9	112.1	112.7	112.9	113.0	113.6	112.9	112.1	112.1
9310	112.8	113.0	113.2	113.8	113.0	112.3	112.8	113.0	113.2	113.8	113.0	112.3	112.3
9311	112.0	112.2	112.3	113.0	112.2	111.3	112.0	112.2	112.3	113.0	112.2	111.3	111.3
9312	111.0	111.0	111.1	111.9	111.0	110.2	111.0	111.0	111.1	111.9	111.0	110.2	110.2
9401	101.7	101.8	101.8	101.9	101.8	101.6	112.9	113.0	113.1	114.0	113.0	112.0	112.0

**1b**  
**MONTHLY LINKING OF DIRECT MONTH-TO-MONTH MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Milk

Province: Ontario

Year	Direct month-to-month indices calculated as						Indices on the December 1988 time base obtained by linking every month the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.2	100.2	100.2	100.2	100.2	100.2	100.1	100.1	100.1	100.2	100.1	100.1	100.1
8903	97.8	97.6	97.5	97.8	97.6	97.4	97.9	97.7	97.5	98.0	97.7	97.5	97.5
8904	104.5	104.6	104.6	104.8	104.6	104.3	102.4	102.2	102.1	102.7	102.2	101.7	101.7
8905	100.4	100.4	100.4	100.6	100.4	100.2	102.8	102.6	102.4	103.3	102.6	101.9	101.9
8906	100.3	100.4	100.4	100.4	100.4	100.3	103.1	103.0	102.8	103.7	103.0	102.3	102.3
8907	99.3	99.1	98.9	99.3	99.1	99.0	102.4	102.1	101.7	102.9	102.1	101.2	101.2
8908	99.1	98.9	98.8	99.3	98.9	98.6	101.5	101.0	100.4	102.2	101.0	99.7	99.7
8909	102.7	103.1	103.7	103.5	103.1	102.8	104.1	104.1	104.1	105.8	104.1	102.6	102.6
8910	103.4	103.3	103.2	103.4	103.3	103.2	107.7	107.6	107.4	109.4	107.6	105.8	105.8
8911	99.0	99.0	99.0	99.1	99.0	98.9	106.6	106.5	106.4	108.4	106.5	104.7	104.7
8912	100.1	100.1	100.1	100.1	100.1	100.1	106.7	106.6	106.4	108.4	106.6	104.8	104.8
9001	99.2	99.0	98.8	99.3	99.0	98.6	105.9	105.6	105.2	107.7	105.6	103.3	103.3
9002	100.5	100.7	100.9	100.9	100.7	100.4	106.4	106.3	106.1	108.7	106.3	103.8	103.8
9003	99.7	99.7	99.6	99.7	99.7	99.6	106.1	105.9	105.7	108.4	105.9	103.3	103.3
9004	100.7	100.7	100.7	100.8	100.7	100.6	106.8	106.6	106.5	109.2	106.6	104.0	104.0
9005	100.5	100.4	100.4	100.5	100.4	100.4	107.2	107.1	107.0	109.8	107.1	104.4	104.4
9006	98.1	98.0	97.8	98.2	98.0	97.7	105.3	104.9	104.6	107.8	104.9	102.0	102.0
9007	99.2	98.9	98.5	99.0	98.9	98.8	104.4	103.8	103.1	106.8	103.8	100.8	100.8
9008	100.1	100.1	100.1	100.1	100.1	100.1	104.5	103.9	103.2	106.9	103.9	100.9	100.9
9009	109.1	108.9	108.8	109.3	108.9	108.5	114.1	113.2	112.2	116.9	113.2	109.5	109.5
9010	99.9	99.9	99.9	100.2	99.9	99.6	114.0	113.1	112.1	117.1	113.1	109.0	109.0
9011	99.5	99.4	99.4	99.5	99.4	99.4	113.4	112.4	111.4	116.5	112.4	108.3	108.3
9012	98.8	98.8	98.7	98.9	98.8	98.7	112.1	111.1	109.9	115.2	111.1	106.9	106.9
9101	98.8	98.8	98.8	98.9	98.8	98.7	110.7	109.7	108.7	113.9	109.7	105.5	105.5
9102	100.2	100.1	99.9	100.2	100.1	99.9	110.9	109.8	108.6	114.1	109.8	105.4	105.4
9103	103.6	103.4	103.1	103.6	103.4	103.2	115.0	113.5	112.0	118.2	113.5	108.8	108.8
9104	97.7	97.9	98.2	98.2	97.9	97.6	112.3	111.1	109.9	116.1	111.1	106.1	106.1
9105	97.8	98.0	98.1	98.2	98.0	97.8	109.8	108.9	107.9	113.9	108.9	103.8	103.8
9106	99.7	99.8	99.9	99.9	99.8	99.6	109.5	108.6	107.7	113.9	108.6	103.4	103.4
9107	101.9	102.3	102.8	102.5	102.3	102.1	111.6	111.1	110.7	116.8	111.1	105.5	105.5
9108	99.8	99.9	99.9	99.9	99.9	99.8	111.4	111.0	110.6	116.7	111.0	105.4	105.4
9109	97.2	97.2	97.2	97.4	97.2	97.0	108.2	107.9	107.5	113.6	107.9	102.2	102.2
9110	101.2	101.2	101.3	101.4	101.2	101.0	109.5	109.2	108.9	115.2	109.2	103.2	103.2
9111	102.8	102.9	103.0	103.3	102.9	102.6	112.6	112.3	112.2	119.0	112.3	105.8	105.8
9112	98.7	98.8	98.8	98.9	98.8	98.6	111.1	111.0	110.9	117.7	111.0	104.3	104.3
9201	100.6	100.6	100.6	100.7	100.6	100.5	111.8	111.7	111.5	118.5	111.7	104.9	104.9
9202	100.5	100.2	100.0	100.6	100.2	99.9	112.3	111.9	111.5	119.2	111.9	104.8	104.8
9203	95.4	95.0	94.6	95.5	95.0	94.4	107.1	106.3	105.5	113.8	106.3	99.0	99.0
9204	101.3	101.4	101.4	101.6	101.4	101.1	108.6	107.8	106.9	115.7	107.8	100.1	100.1
9205	101.6	101.7	101.8	102.0	101.7	101.5	110.3	109.6	108.9	117.9	109.6	101.5	101.5
9206	101.0	101.1	101.1	101.1	101.1	101.0	111.5	110.8	110.0	119.3	110.8	102.6	102.6
9207	99.9	99.9	99.9	99.9	99.9	99.9	111.4	110.7	109.9	119.2	110.7	102.5	102.5
9208	99.3	99.2	99.1	99.3	99.2	99.1	110.6	109.8	109.0	118.4	109.8	101.5	101.5
9209	102.2	102.5	102.7	102.7	102.5	102.2	113.0	112.5	111.9	121.6	112.5	103.7	103.7
9210	101.7	102.1	102.5	102.4	102.1	101.8	115.0	114.8	114.7	124.5	114.8	105.6	105.6
9211	100.0	100.0	100.1	100.1	100.0	100.0	114.9	114.9	114.8	124.6	114.9	105.6	105.6
9212	100.9	101.0	101.1	101.0	101.0	100.9	116.0	116.0	116.0	125.9	116.0	106.6	106.6
9301	99.9	99.9	99.9	100.0	99.9	99.9	115.9	115.9	115.9	125.9	115.9	106.4	106.4
9302	100.5	100.5	100.5	100.6	100.5	100.4	116.5	116.5	116.5	126.7	116.5	106.9	106.9
9303	100.0	100.0	100.0	100.1	100.0	99.9	116.5	116.5	116.6	126.8	116.5	106.8	106.8
9304	99.6	99.7	99.7	99.7	99.7	99.6	116.1	116.1	116.2	126.5	116.1	106.4	106.4
9305	98.8	98.9	99.1	99.0	98.9	98.8	114.7	114.9	115.1	125.2	114.9	105.1	105.1
9306	99.1	99.0	99.0	99.1	99.0	99.0	113.6	113.8	114.0	124.1	113.8	104.1	104.1
9307	99.2	99.1	99.1	99.2	99.1	99.1	112.7	112.8	112.9	123.1	112.8	103.1	103.1
9308	99.7	99.7	99.7	99.8	99.7	99.6	112.4	112.5	112.6	122.9	112.5	102.7	102.7
9309	100.2	100.2	100.3	100.3	100.2	100.1	112.6	112.7	112.9	123.3	112.7	102.8	102.8
9310	100.1	100.1	100.2	100.2	100.1	100.1	112.7	112.9	113.1	123.5	112.9	103.0	103.0
9311	99.3	99.2	99.1	99.3	99.2	99.1	111.9	112.0	112.1	122.6	112.0	102.1	102.1
9312	99.0	99.0	99.0	99.2	99.0	98.8	110.8	110.9	111.0	121.6	110.9	100.8	100.8
9401	102.0	102.1	102.1	102.2	102.1	101.9	113.1	113.2	113.3	124.3	113.2	102.8	102.8



2b  
**YEARLY LINKING OF DIRECT MICRO-INDICES ON THE PREVIOUS DECEMBER TIME BASE  
CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Milk

Province: Ontario

Year	Direct indices on the previous December time base calculated as						Indices on the December 1988 time base obtained by linking every December the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.1	100.1	100.1	100.2	100.1	100.1	100.1	100.1	100.1	100.1	100.2	100.1	100.1
8903	97.9	97.7	97.5	97.9	97.7	97.5	97.9	97.7	97.5	97.9	97.7	97.5	97.5
8904	102.4	102.2	102.1	102.3	102.2	102.1	102.4	102.2	102.1	102.3	102.2	102.1	102.1
8905	102.8	102.6	102.4	102.8	102.6	102.4	102.8	102.6	102.4	102.8	102.6	102.6	102.4
8906	103.1	103.0	102.8	103.1	103.0	102.8	103.1	103.0	102.8	103.1	103.0	103.0	102.8
8907	102.4	102.1	101.7	102.4	102.1	101.7	102.4	102.1	101.7	102.4	102.1	101.7	101.7
8908	101.5	101.0	100.4	101.2	101.0	100.7	101.5	101.0	100.4	101.2	101.0	101.0	100.7
8909	104.1	104.1	104.1	104.3	104.1	104.0	104.1	104.1	104.1	104.1	104.3	104.1	104.0
8910	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.4	107.7	107.6	107.6	107.4
8911	106.6	106.5	106.4	106.6	106.5	106.4	106.6	106.5	106.4	106.6	106.5	106.5	106.4
8912	106.7	106.6	106.4	106.7	106.6	106.4	106.7	106.6	106.4	106.7	106.6	106.6	106.4
9001	99.2	99.0	98.8	99.3	99.0	98.6	105.9	105.6	105.2	106.0	105.6	105.6	105.0
9002	99.7	99.7	99.7	99.8	99.7	99.6	106.4	106.3	106.1	106.5	106.3	106.0	106.0
9003	99.4	99.4	99.3	99.5	99.4	99.2	106.1	105.9	105.7	106.2	105.9	105.6	105.6
9004	100.0	100.0	100.0	100.1	100.0	100.0	106.8	106.6	106.5	106.9	106.6	106.6	106.4
9005	100.5	100.5	100.5	100.6	100.5	100.4	107.2	107.1	107.0	107.4	107.1	107.1	106.8
9006	98.6	98.5	98.3	98.8	98.5	98.1	105.3	104.9	104.6	105.4	104.9	104.9	104.4
9007	97.9	97.4	96.8	98.0	97.4	96.6	104.4	103.8	103.1	104.6	103.8	102.8	102.8
9008	98.0	97.5	96.9	98.1	97.5	96.7	104.5	103.9	103.2	104.7	103.9	102.9	102.9
9009	106.9	106.2	105.4	107.1	106.2	105.3	114.1	113.2	112.2	114.2	113.2	112.1	112.1
9010	106.8	106.1	105.3	106.8	106.1	105.3	114.0	113.1	112.1	114.0	113.1	112.1	112.1
9011	106.3	105.5	104.6	106.3	105.5	104.7	113.4	112.4	111.4	113.4	112.4	111.4	111.4
9012	105.1	104.2	103.3	105.1	104.2	103.3	112.1	111.1	109.9	112.1	111.1	110.0	110.0
9101	98.8	98.8	98.8	98.9	98.8	98.7	110.7	109.7	108.7	110.8	109.7	108.6	108.6
9102	98.9	98.9	98.8	99.0	98.9	98.8	110.9	109.8	108.6	110.9	109.8	108.6	108.6
9103	102.5	102.2	101.9	102.4	102.2	102.0	115.0	113.5	112.0	114.8	113.5	112.2	112.2
9104	100.1	100.0	100.0	100.3	100.0	99.7	112.3	111.1	109.9	112.5	111.1	109.7	109.7
9105	98.0	98.0	98.1	98.4	98.0	97.5	109.8	108.9	107.9	110.4	108.9	107.3	107.3
9106	97.6	97.8	98.0	98.2	97.8	97.4	109.5	108.6	107.7	110.0	108.6	107.2	107.2
9107	99.5	100.1	100.7	100.6	100.1	99.5	111.6	111.1	110.7	112.8	111.1	109.4	109.4
9108	99.3	99.9	100.6	100.5	99.9	99.4	111.4	111.0	110.6	112.7	111.0	109.3	109.3
9109	96.6	97.1	97.8	98.0	97.1	96.2	108.2	107.9	107.5	109.9	107.9	105.8	105.8
9110	97.7	98.3	99.0	99.5	98.3	97.1	109.5	109.2	108.9	111.6	109.2	106.8	106.8
9111	100.4	101.2	102.0	102.6	101.2	99.7	112.6	112.3	112.2	115.1	112.3	109.6	109.6
9112	99.1	99.9	100.8	101.4	99.9	98.4	111.1	111.0	110.9	113.7	111.0	108.2	108.2
9201	100.6	100.6	100.6	100.7	100.6	100.5	111.8	111.7	111.5	114.5	111.7	108.8	108.8
9202	101.2	100.9	100.6	101.2	100.9	100.6	112.3	111.9	111.5	115.1	111.9	108.8	108.8
9203	96.5	95.8	95.2	96.7	95.8	94.9	107.1	106.3	105.5	109.9	106.3	102.7	102.7
9204	97.7	97.1	96.5	98.1	97.1	96.1	108.6	107.8	106.9	111.6	107.8	103.9	103.9
9205	99.3	98.8	98.2	99.6	98.8	97.9	110.3	109.6	108.9	113.3	109.6	105.9	105.9
9206	100.4	99.8	99.3	100.7	99.8	98.9	111.5	110.8	110.0	114.5	110.8	107.0	107.0
9207	100.3	99.8	99.2	100.6	99.8	98.9	111.4	110.7	109.9	114.4	110.7	106.9	106.9
9208	99.6	99.0	98.3	99.8	99.0	98.0	110.6	109.8	109.0	113.5	109.8	106.0	106.0
9209	101.8	101.4	100.9	102.1	101.4	100.6	113.0	112.5	111.9	116.1	112.5	108.8	108.8
9210	103.5	103.5	103.5	103.8	103.5	103.2	115.0	114.8	114.7	118.1	114.8	111.6	111.6
9211	103.5	103.5	103.6	103.8	103.5	103.2	114.9	114.9	114.8	118.1	114.9	111.7	111.7
9212	104.4	104.5	104.7	104.8	104.5	104.2	116.0	116.0	116.0	119.2	116.0	112.7	112.7
9301	99.9	99.9	99.9	100.0	99.9	99.9	115.9	115.9	115.9	119.2	115.9	112.6	112.6
9302	100.5	100.5	100.4	100.6	100.5	100.3	116.5	116.5	116.5	119.9	116.5	113.1	113.1
9303	100.5	100.5	100.5	100.5	100.5	100.4	116.5	116.5	116.6	119.9	116.5	113.2	113.2
9304	100.1	100.1	100.1	100.2	100.1	100.1	116.1	116.1	116.2	119.4	116.1	112.8	112.8
9305	98.9	99.1	99.2	99.2	99.1	98.9	114.7	114.9	115.1	118.3	114.9	111.5	111.5
9306	98.0	98.1	98.2	98.4	98.1	97.8	113.6	113.8	114.0	117.3	113.8	110.3	110.3
9307	97.2	97.3	97.3	97.7	97.3	96.8	112.7	112.8	112.9	116.4	112.8	109.2	109.2
9308	96.9	97.0	97.1	97.4	97.0	96.6	112.4	112.5	112.6	116.1	112.5	108.9	108.9
9309	97.1	97.2	97.3	97.5	97.2	96.9	112.6	112.7	112.9	116.2	112.7	109.2	109.2
9310	97.2	97.3	97.5	97.6	97.3	97.0	112.7	112.9	113.1	116.4	112.9	109.4	109.4
9311	96.5	96.6	96.6	96.9	96.6	96.2	111.9	112.0	112.1	115.5	112.0	108.5	108.5
9312	95.6	95.6	95.6	96.0	95.6	95.2	110.8	110.9	111.0	114.4	110.9	107.3	107.3
9401	102.0	102.1	102.1	102.2	102.1	101.9	113.1	113.2	113.3	117.0	113.2	109.4	109.4

**3b**  
**QUINQUENNIAL LINKING OF DIRECT MICRO-INDICES**  
**CALCULATED USING PRICES FROM A COMMON SAMPLE**

Commodity: Milk

Province: Ontario

Year	Direct indices on the Dec. 1988 time base up to Dec. 1993 and on the Dec. 1993 time base for January 1994 calculated as						Indices on the December 1988 time base obtained by linking in December 1993 the indices from the left-hand column						
	Month	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR	RAMP	RGMP	RHMP	AMPR	GMPR	HMPR
8901	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
8902	100.2	100.1	100.1	100.2	100.1	100.1	100.2	100.1	100.1	100.2	100.1	100.1	100.1
8903	98.0	97.7	97.5	97.9	97.7	97.7	98.0	97.7	97.5	97.9	97.7	97.7	97.5
8904	102.4	102.2	102.1	102.3	102.2	102.1	102.4	102.2	102.1	102.3	102.2	102.2	102.1
8905	102.8	102.6	102.4	102.8	102.6	102.4	102.8	102.6	102.4	102.8	102.6	102.6	102.4
8906	103.1	103.0	102.8	103.1	103.0	102.8	103.1	103.0	102.8	103.1	103.0	103.0	102.8
8907	102.4	102.1	101.7	102.4	102.1	101.7	102.4	102.1	101.7	102.4	102.1	102.1	101.7
8908	101.5	101.0	100.4	101.2	101.0	100.7	101.5	101.0	100.4	101.2	101.0	101.0	100.7
8909	104.2	104.1	104.1	104.3	104.1	104.0	104.2	104.1	104.1	104.3	104.1	104.0	104.0
8910	107.7	107.6	107.5	107.8	107.6	107.4	107.7	107.6	107.5	107.8	107.6	107.6	107.4
8911	106.6	106.5	106.4	106.6	106.5	106.4	106.6	106.5	106.4	106.6	106.5	106.5	106.4
8912	106.7	106.6	106.4	106.7	106.6	106.4	106.7	106.6	106.4	106.7	106.6	106.6	106.4
9001	105.9	105.6	105.2	105.9	105.6	105.2	105.9	105.6	105.2	105.9	105.6	105.6	105.2
9002	106.4	106.3	106.1	106.4	106.3	106.2	106.4	106.3	106.1	106.4	106.3	106.3	106.2
9003	106.1	105.9	105.7	106.0	105.9	105.8	106.1	105.9	105.7	106.0	105.9	105.9	105.8
9004	106.8	106.6	106.5	106.7	106.6	106.5	106.8	106.6	106.5	106.7	106.6	106.6	106.5
9005	107.2	107.1	107.0	107.3	107.1	106.9	107.2	107.1	107.0	107.3	107.1	106.9	106.9
9006	105.3	104.9	104.6	105.2	104.9	104.6	105.3	104.9	104.6	105.2	104.9	104.6	104.6
9007	104.4	103.8	103.1	104.4	103.8	103.1	104.4	103.8	103.1	104.4	103.8	103.1	103.1
9008	104.5	103.9	103.2	104.5	103.9	103.2	104.5	103.9	103.2	104.5	103.9	103.9	103.2
9009	114.1	113.2	112.2	114.0	113.2	112.3	114.1	113.2	112.2	114.0	113.2	112.3	112.3
9010	114.0	113.1	112.1	113.8	113.1	112.3	114.0	113.1	112.1	113.8	113.1	112.3	112.3
9011	113.4	112.4	111.4	113.2	112.4	111.6	113.4	112.4	111.4	113.2	112.4	111.6	111.6
9012	112.1	111.1	110.0	111.8	111.1	110.3	112.1	111.1	110.0	111.8	111.1	110.3	110.3
9101	110.7	109.7	108.7	110.5	109.7	109.0	110.7	109.7	108.7	110.5	109.7	109.0	109.0
9102	110.9	109.8	108.6	110.6	109.8	108.9	110.9	109.8	108.6	110.6	109.8	108.9	108.9
9103	115.0	113.5	112.0	114.7	113.5	112.3	115.0	113.5	112.0	114.7	113.5	112.3	112.3
9104	112.3	111.1	109.9	112.0	111.1	110.2	112.3	111.1	109.9	112.0	111.1	110.2	110.2
9105	109.8	108.9	107.9	109.7	108.9	108.1	109.8	108.9	107.9	109.7	108.9	108.1	108.1
9106	109.5	108.6	107.8	109.4	108.6	107.9	109.5	108.6	107.8	109.4	108.6	107.9	107.9
9107	111.6	111.1	110.7	111.6	111.1	110.7	111.6	111.1	110.7	111.6	111.1	110.7	110.7
9108	111.4	111.0	110.6	111.5	111.0	110.5	111.4	111.0	110.6	111.5	111.0	110.5	110.5
9109	108.3	107.9	107.5	108.3	107.9	107.4	108.3	107.9	107.5	108.3	107.9	107.4	107.4
9110	109.5	109.2	108.9	109.7	109.2	108.7	109.5	109.2	108.9	109.7	109.2	108.7	108.7
9111	112.6	112.4	112.2	113.0	112.4	111.7	112.6	112.4	112.2	113.0	112.4	111.7	111.7
9112	111.1	111.0	110.9	111.5	111.0	110.4	111.1	111.0	110.9	111.5	111.0	110.4	110.4
9201	111.8	111.7	111.6	112.2	111.7	111.1	111.8	111.7	111.6	112.2	111.7	111.1	111.1
9202	112.3	111.9	111.5	112.5	111.9	111.4	112.3	111.9	111.5	112.5	111.9	111.4	111.4
9203	107.1	106.3	105.5	107.1	106.3	105.5	107.1	106.3	105.5	107.1	106.3	105.5	105.5
9204	108.6	107.8	107.0	108.5	107.8	107.0	108.6	107.8	107.0	108.5	107.8	107.0	107.0
9205	110.3	109.6	108.9	110.3	109.6	108.9	110.3	109.6	108.9	110.3	109.6	108.9	108.9
9206	111.5	110.8	110.0	111.5	110.8	110.1	111.5	110.8	110.0	111.5	110.8	110.1	110.1
9207	111.4	110.7	109.9	111.4	110.7	110.0	111.4	110.7	109.9	111.4	110.7	110.0	110.0
9208	110.6	109.8	109.0	110.6	109.8	109.0	110.6	109.8	109.0	110.6	109.8	109.0	109.0
9209	113.0	112.5	111.9	113.2	112.5	111.7	113.0	112.5	111.9	113.2	112.5	111.7	111.7
9210	115.0	114.9	114.7	115.3	114.9	114.4	115.0	114.9	114.7	115.3	114.9	114.4	114.4
9211	114.9	114.9	114.8	115.2	114.9	114.5	114.9	114.9	114.8	115.2	114.9	114.5	114.5
9212	116.0	116.0	116.0	116.4	116.0	115.6	116.0	116.0	116.0	116.4	116.0	115.6	115.6
9301	115.9	115.9	116.0	116.3	115.9	115.5	115.9	115.9	116.0	116.3	115.9	115.5	115.5
9302	116.5	116.5	116.5	117.0	116.5	116.0	116.5	116.5	116.5	117.0	116.5	116.0	116.0
9303	116.5	116.5	116.6	117.0	116.5	116.1	116.5	116.5	116.6	117.0	116.5	116.1	116.1
9304	116.1	116.2	116.2	116.6	116.2	115.7	116.1	116.2	116.2	116.6	116.2	115.7	115.7
9305	114.7	114.9	115.1	115.4	114.9	114.5	114.7	114.9	115.1	115.4	114.9	114.5	114.5
9306	113.7	113.8	114.0	114.4	113.8	113.2	113.7	113.8	114.0	114.4	113.8	113.2	113.2
9307	112.7	112.8	112.9	113.6	112.8	112.0	112.7	112.8	112.9	113.6	112.8	112.0	112.0
9308	112.4	112.5	112.6	113.3	112.5	111.7	112.4	112.5	112.6	113.3	112.5	111.7	111.7
9309	112.6	112.8	112.9	113.5	112.8	112.0	112.6	112.8	112.9	113.5	112.8	112.0	112.0
9310	112.7	112.9	113.1	113.6	112.9	112.2	112.7	112.9	113.1	113.6	112.9	112.2	112.2
9311	111.9	112.0	112.1	112.8	112.0	111.2	111.9	112.0	112.1	112.8	112.0	111.2	111.2
9312	110.8	110.9	111.0	111.8	110.9	110.0	110.8	110.9	111.0	111.8	110.9	110.0	110.0
9401	102.0	102.1	102.1	102.2	102.1	101.9	113.1	113.2	113.3	114.2	113.2	112.2	112.2

# **ANNEX II**

## **FORMULAE OF PRICE MICRO-INDICES**

<b>Formulae of direct indices</b>	<b>p.1</b>
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# FORMULAE OF DIRECT MICRO-INDICES

FOR THE OBSERVATION MONTH  $t$

on the base of the month  $b$

$$P_{t/b}^{Dir.}$$

<b>RAMP</b>	$\frac{\left[ \sum_{i=1}^N p_t^i \right] \div N}{\left[ \sum_{i=1}^N p_b^i \right] \div N}$	<b>AMPR</b>	$\frac{\sum_{i=1}^N \left[ p_t^i / p_b^i \right]}{N}$
<b>RGMP</b>	$\frac{\sqrt[N]{\prod_{i=1}^N p_t^i}}{\sqrt[N]{\prod_{i=1}^N p_b^i}}$	<b>GMPR</b>	$\sqrt[N]{\prod_{i=1}^N \left[ p_t^i / p_b^i \right]}$
<b>RHMP</b>	$\frac{N \div \sum_{i=1}^N \left[ 1 / p_t^i \right]}{N \div \sum_{i=1}^N \left[ 1 / p_b^i \right]}$	<b>HMPR</b>	$\frac{N}{\sum_{i=1}^N \left[ p_b^i / p_t^i \right]}$

- RAMP** Ratio of **A**rithmetic **M**ean **P**rices (equiweighted);
- RGMP** Ratio of **G**eometric **M**ean **P**rices (equiweighted);
- RHMP** Ratio of **H**armonic **M**ean **P**rices (equiweighted);
- AMPR** **A**rithmetic **M**ean of **P**rice **R**elatives (equiweighted);
- GMPR** **G**eometric **M**ean of **P**rice **R**elatives (equiweighted);
- HMPR** **H**armonic **M**ean of **P**rice **R**elatives (equiweighted).

# FORMULAE OF CHAIN MICRO-INDICES

FOR THE OBSERVATION MONTH  $t$  IN YEAR  $x$

on the December 1988 time base

$$P_{t\{x\}/D\{88\}}^{Chain}$$

<p><b>Monthly linking</b></p> <p>Chain indices obtained by linking direct month-to-month micro-indices to each other every month</p>	$\prod_{m\{y\}=J\{89\}}^{t\{x\}} P_{m\{y\}/(m-1)\{y\}}^{Dir.}$
<p><b>Annual linking</b></p> <p>Chain indices obtained by linking direct micro-indices on the previous December time base to each other every December</p>	$P_{t\{x\}/D\{x-1\}}^{Dir.} * \prod_{D\{y\}=D\{88\}}^{D\{x-1\}} P_{D\{y\}/D\{y-1\}}^{Dir.}$
<p><b>Quinquennial linking</b> (only one index)</p> <p>Chain index obtained by linking the January 1994 direct micro-index on the December 1993 time base to the direct micro-index for December 1993 on the 1988 time base</p>	$P_{J\{94\}/D\{93\}}^{Dir.} * P_{D\{93\}/D\{88\}}^{Dir.}$

## DEFINITIONS OF THE SYMBOLS USED

$p_t^i$   $i$  - th price quote collected in the observation time  $t$  ;

$p_b^i$   $i$  - th price quote collected in the base time  $b$  ;

$p_{m\{y\}}^i$   $i$  - th price quote collected in the month  $m$  of the year  $y$  ;

$p_{m\{y-1\}}^i$   $i$  - th price quote collected in the month  $m$  of the year preceding the year  $y$  ;

$P_{t/b}^{Dir.}$  direct micro-index comparing prices in the observation time  $t$  to those in the base time  $b$  ;

$P_{m\{y\}/(m-1)\{y\}}^{Dir.}$  direct month-to-month price micro-index;

$P_{D\{y\}/D\{y-1\}}^{Dir.}$  direct December-to-December price micro-index;

$P_{t\{x\}/D\{88\}}^{Chain}$  chain price index comparing prices in the observation month  $t$  of the year  $x$  to those in December 1988 ;

$N$  total number of price quotes used in the calculation of a given micro-index. In the case of **bilaterally matched samples**, it is equal to the number of price quotes from the intersection of outlets that provided data in both the base and the observation months of the given direct index. For a month-to-month direct index, this number is as follows:

$$N = n_{(m-1)\{y\}} \cap n_{m\{y\}} .$$

In the case of a **common price sample**, it is equal to the number of price quotes from the intersection of outlets that provided data in all the months from December 1988 to January 1994, as follows:

$$N = \bigcap_{m=D\{88\}}^{J\{94\}} n_m , \text{ where:}$$

$n_m$  is the number of price quotes in the price sample originally selected in any month  $m$  , while

$n_{m\{y\}}$  and  $n_{(m-1)\{y\}}$  are the numbers of price quotes in the price samples originally selected in the two consecutive months  $m$  and  $(m - 1)$  of the year  $y$  .

# ANNEX III

## Examples of actual monthly price quotes for soft drinks collected in chosen Toronto outlets in 1989

Outlets	Year, months											
	89 01	89 02	89 03	89 04	89 05	89 06	89 07	89 08	89 09	89 10	89 11	89 12
1	0.33	0.33	0.49	0.55	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
2	0.99	0.59	0.99	0.99	0.99	0.49	0.99	0.99	0.99	0.99	0.99	0.99
3	0.89	0.59	0.89	0.89	0.89	0.49	0.89	0.89	0.89	0.89	0.89	0.89
4	0.59	0.59	0.49	0.99	0.99	0.99	0.33	0.99	0.59	0.99	0.99	0.49
5	0.39	0.49	0.99	0.50	0.99	0.49	0.99	0.33	0.49	0.99	0.25	0.39
6	0.49	0.99	0.99	0.50	0.99	0.49	0.99	0.33	0.49	0.69	0.25	0.39
7	0.59	0.89	0.89	0.89	0.89	0.89	0.49	0.49	0.49	0.95	0.49	0.49
8	0.49	0.89	0.59	0.59	0.59	0.49	0.99	0.99	0.99	0.49	0.99	0.49
9	0.99	0.99	0.45	0.59	0.99	0.49	0.99	0.49	0.49	0.99	0.39	0.49
10	0.49	0.49	0.95	0.99	0.99	0.99	0.49	0.99	0.49	0.69	0.49	0.49
11	0.79	0.79	0.79	0.79	0.49	0.49	0.49	0.59	0.59	0.79	0.79	0.59
12	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.99	0.99	0.99	0.49	0.99
13	0.49	0.49	0.49	0.49	0.59	0.59	0.59	0.59	0.59	0.49	0.49	0.39
14	0.49	0.69	0.79	0.79	0.59	0.59	0.79	0.79	0.59	0.79	0.59	0.59
15	0.69	0.69	0.79	0.79	0.99	0.40	0.79	0.79	0.79	0.79	0.79	0.79

**Source:** data from the survey of the Canadian Consumer Price Index.