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Volume Measures of Wholesale and Retail Services within the Canadian System of National Accounts

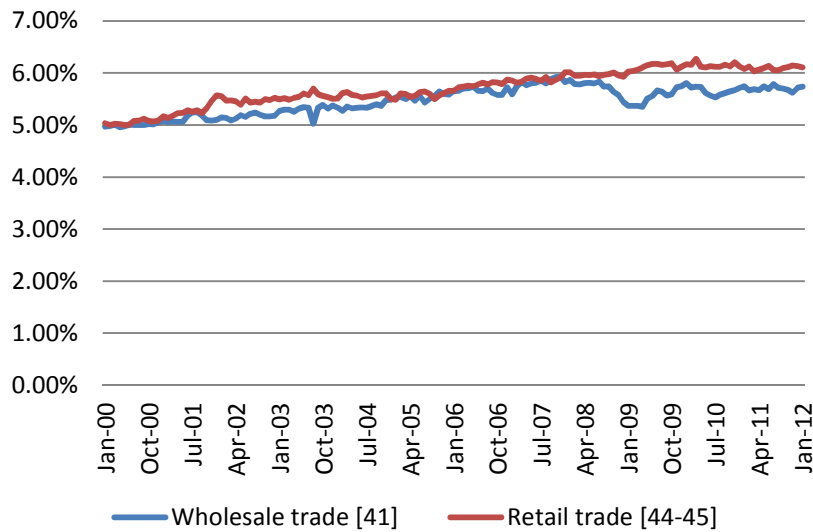
UNECE – Group of Experts on
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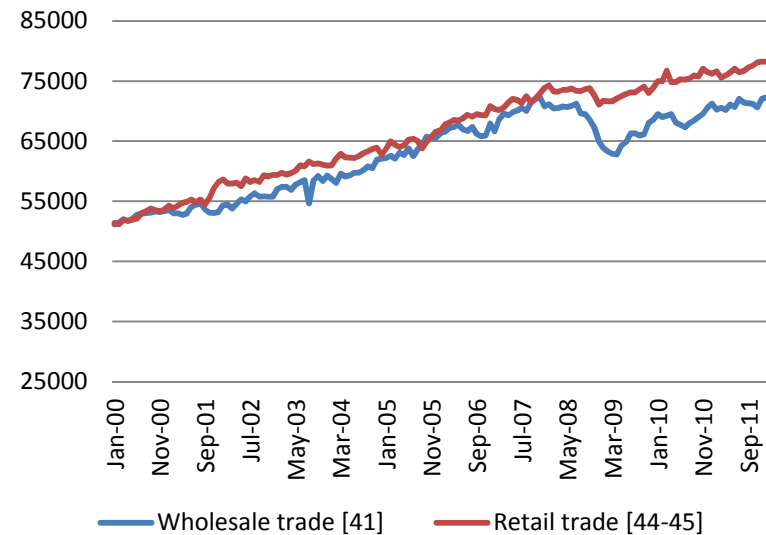


Wholesale and Retail Industry in Canada

Wholesale and retail value-added % of total value-added



Wholesale and retail value-added chained (2002) dollars





Current Methodology

- Volume estimates of wholesale and retail services value-added are published as part of:
 - Constant Price Input-Output Program
 - Monthly Gross Domestic Product by Industry Program
 - Provincial and Territorial Gross Domestic Product by Industry Program
- Monthly volume estimates of wholesale sales and retail sales are also published by Statistics Canada.



Current Methodology – Input-Output Tables

Product	Producer value	Wholesale margin	Retail margin	Wholesale margin rate	Retail margin rate
X	100	50	40	50%	40%
Y	200	60	20	30%	10%
Z	300	60	80	20%	27%
Total	600	170	140		

- A margin rate is calculated for each commodity in the Input-Output Table.
- The rate is computed as the value of the margin divided by the producer value.



Current Methodology – Input-Output Tables

Product	Deflator	Constant producer value	Constant wholesale margin	Constant retail margin	Implicit wholesale price	Implicit retail price
X	105	95	48	38	105	105
Y	108	185	56	19	108	108
Z	115	261	52	70	115	115
Total	111	541	155	126	109	111

- Producer value is deflated using an appropriate deflator.
- Current dollar margin rate is applied to the deflated producer price to get a constant price margin.
- An implicit margin price is calculated as a check on quality.

Current Methodology – Monthly GDP

- Data sources:
 - Annual Wholesale Trade Origin and Destination Survey
 - Quarterly Retail Commodity Survey
 - Import prices indexes
 - Industrial product price indexes (IPPI)
 - Consumer price indexes (CPI)



Current Methodology – Monthly GDP Wholesale Industry

- For each commodity traded by wholesalers the program uses a combination of IPPI and import prices.
- IPPI and import price weights are taken from the most recent I-O Tables

$$P_{c,2002} = (1-m_{c,2002}) * O_{c,2002} + m_{c,2002} * M_{c,2002}$$

- Where:
 - $m_{c,2002}$ = share of imports in total supply
 - $O_{c,2002}$ = output price index
 - $M_{c,2002}$ = imports price index

- The price of the wholesale commodity is then weighted to derive the industry deflator using the commodity weights from the most recent wholesale trade commodity survey

$$P_{TG,2002} = \sum_c w_{c,2001} * P_{c,2002}$$

- Where:
 - $P_{c,2002}$ = price index of commodity c
 - $w_{c,2001}$ = weight of c in sales of a trade group (industry)



Current Methodology – Monthly GDP

Retail Trade

- Each commodity traded by retailers within an industry is deflated by a consumer price index (excluding the impact of tax).
- The deflated values are then weighted to derive an industry total.
- The industry totals are weighted to derive a total volume estimate of sales for the retail trade industry.
- The volume estimate of sales for the industry is used to move the most recent value-added measure of retail trade, to derive the monthly estimate of GDP for the retail trade industry.



Issues with the Current Methodology

- Assumes that the price of the wholesale and retail services move in the same manner as the price of the goods to which the service is being applied.
- No adjustment is made for potential changes in the quality of the service.
- The monthly GDP estimates are moved by measures of the sales volume rather than the service volume. The change in the price of the good being sold (either wholesale or retail) is used as a proxy for the change in the price of the retailing or wholesaling service.



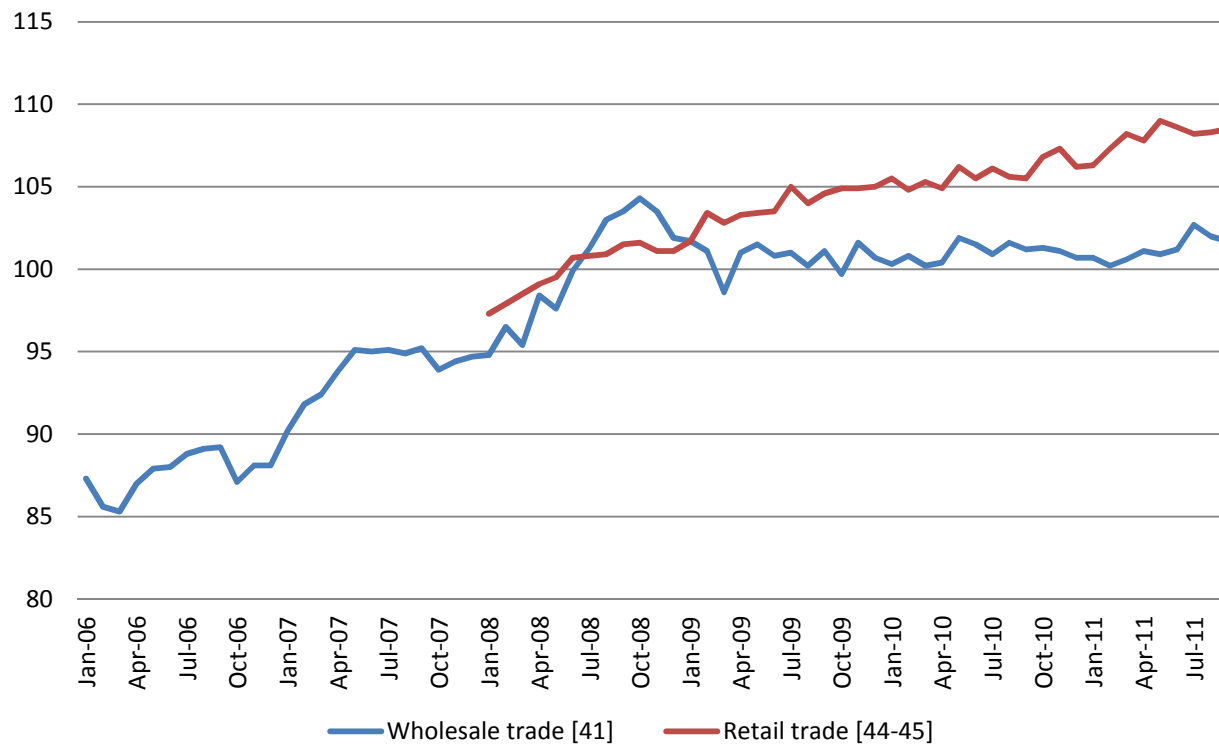
Wholesale and Retail Price Indexes

- Retail and wholesale service price is defined as the difference between the wholesale/retail selling price and the wholesale/retail purchase price. In order to calculate a wholesale and retail price index the following information is collected:
 - Product description
 - Product manufacturer or label
 - Product code
 - Size/weight
 - Unit of measure
 - Retail/wholesale activities
 - Average purchase price
 - Average selling price.



Wholesale and Retail Price Indexes

Wholesale and Retail Services Price Indexes



Deflation using Wholesale and Retail Price Indexes

Input-Output Tables – First Option

	Current price value	Deflator	Share	Constant price value
Wholesale industry	70	1.07		66
Commodity 1	15	1.07	21%	14
Commodity 2	25	1.07	36%	23
Commodity 3	30	1.07	43%	28

- First deflate the aggregate industry output, then allocate these volumes to the individual commodities using each commodity's share of the total industry margin.
- The appeal of this approach is that the industry output is deflated with an industry deflator.
- The drawback to this approach is that it implies the same margin deflator for each commodity within the Input-Output Tables.



Deflation using Wholesale and Retail Price Indexes Input-Output Tables – Second Option

	Producer current price value	Margin current price value	Margin rate	Producer deflator	Producer constant price value	Margin constant price value
Commodity 1	150	15	10.00%	1.01	149	15
Commodity 2	300	25	8.30%	1.02	294	25
Commodity 3	550	30	5.50%	1.02	539	29

➤ First deflate the margin using the current methodology, which employs the use of the product deflator.

Deflation using Wholesale and Retail Price Indexes

Input-Output Tables – Second Option

	Margin constant price value	Commodity share	Adjustment factor	Adjusted constant price margin	Adjusted margin deflator
Wholesale industry	66				
Commodity 1	15	22%	-0.65	14	1.056
Commodity 2	25	36%	-1.07	23	1.066
Commodity 3	29	43%	-1.28	28	1.066
Commodity total	69			66	

- Calculate a total industry volume estimate using the Wholesale Service Price Index.
- Use the volume shares calculated with the product deflators to distribute the aggregate industry volume across the commodities.

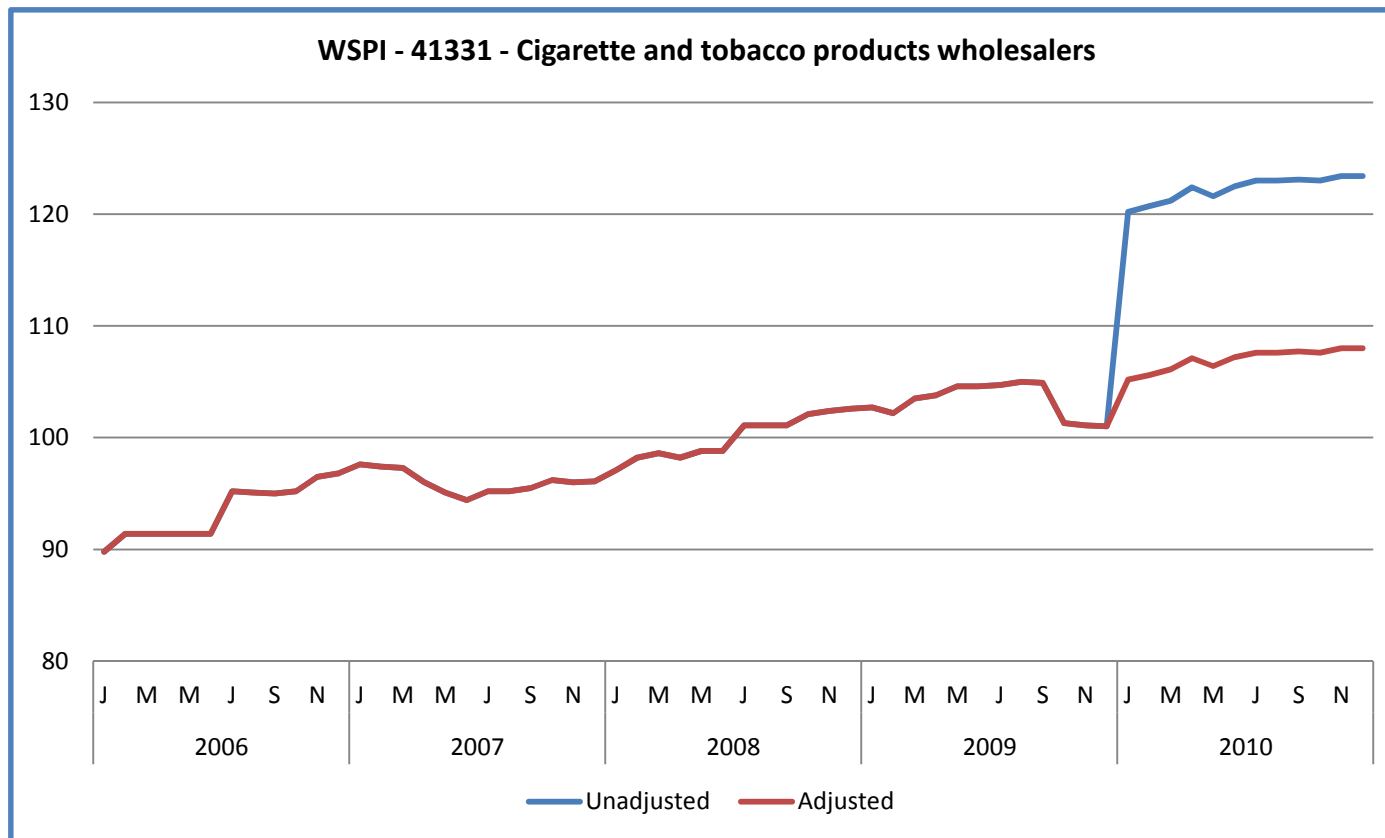
Deflation using Wholesale and Retail Price Indexes

Monthly GDP

- The CSNA is also exploring the use of the Wholesale Service Price Indexes to derive the monthly volume estimates of wholesale sales.
- The wholesale price survey collects two prices from wholesalers, a purchase price and a selling price from which a margin price is computed.
- From these data three price indexes can be constructed:
 - the margin price index,
 - the purchase price index
 - the selling price index.
- Retailers generally carry a wider variety of products than wholesalers. The Retail Selling Price Index is not currently being considered, as the basket of commodities on which it is based is too limited for deflating sales.



Selling Price - Some Challenges

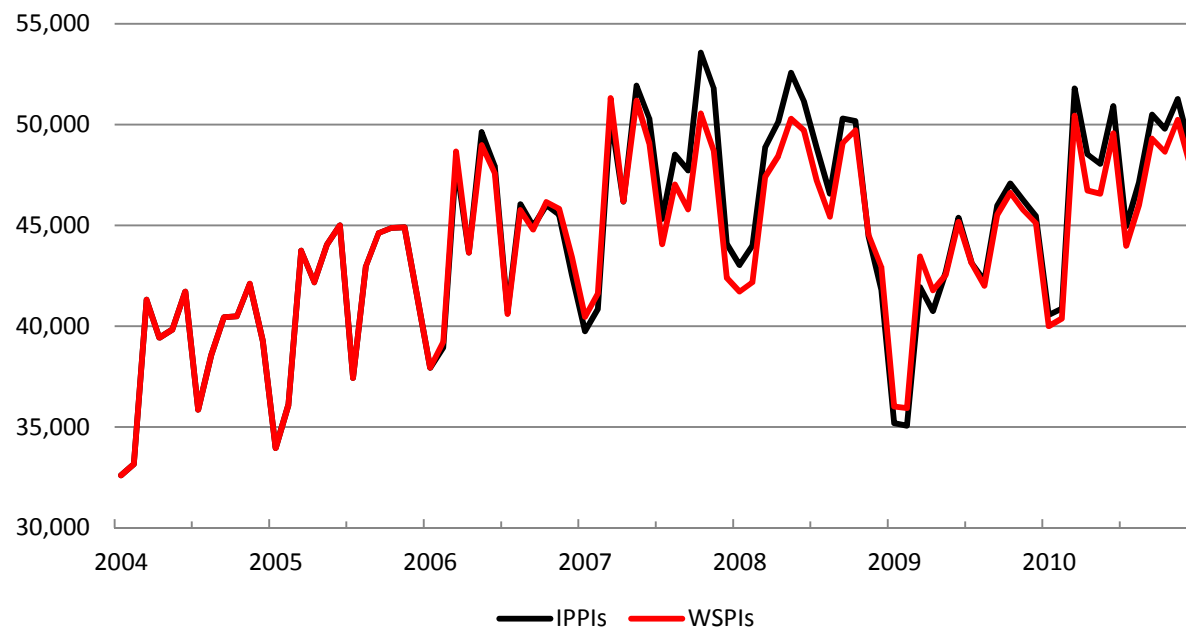


- Wholesale and retail commodities are selected based on the margin price. Heterogeneous commodities can be substituted for one another provided their margins are consistent.



Deflation using Wholesale and Retail Price Index

41- Wholesale sales nsa (millions)





Moving Forward

- ✓ Wholesaling and retailing industries pose a particular challenge given the service price is not directly observable.
- ✓ Ideally the program is two dimensional—by industry and by commodity.
- ✓ Timeliness is a consideration.
- ✓ Allocate enough time for required research and to integrate the new information.