Generate ISIC-based price deflator from CPI

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Link COICOP to ISIC

- No simple 1-to-1 correspondence possible
- For example:
    - 01.1 Food
    - 02.2 Tobacco
    - 03.2 Footwear

- Can be sold in many different types of stores, for example:
    - 4711 Retail sale in non-specialized stores with food, beverages or tobacco predominating
    - 4719 Other retail sale in non-specialized stores
    - 4721 Retail sale of food in specialized stores
    - 4723 Retail sale of tobacco products in specialized stores
    - 4730 Retail sale of automotive fuel in specialized stores
    - 4771 Retail sale of clothing, footwear and leather articles in specialized stores
    - 4791 Retail sale via mail order houses or via Internet

Price indices for deflating turnover in retail trade

- Available:
  - Price index by product (from CPI)
  - Classified according to COICOP
  - E.g. "Price of cigarettes increased by 5%"
- Needed:
  - Price index by type of store
  - Classified according to ISIC
  - E.g. "Prices in supermarkets increased by ???"

Transform the COICOP information to ISIC information

- We need to know:
- How much of each product in sold in different types of stores (or elsewhere)

Transform COICOP info to ISIC info

ISIC 4	Food	Cigarettes	Shoes	Other
4711 Retail sale in non-specialized stores with food, beverages or tobacco predominating	80%	20%	0%	0%
4719 Other retail sale in non-specialized stores	20%	20%	60%	0%

- Let's say from CPI we have price index for:
  - Food = 105.6
  - Cigarettes = 110.8
  - Shoes = 125.0

- For 4711:
  - Price index composed of price indices for food and cigarettes

Transformation

$$P_{4711} = w_{food}*P_{food} + w_{cig}*P_{cig}$$
$$= 0.8*P_{food} + 0.2*P_{cig}$$
$$= 0.8*105.6 + 0.2*110.8$$
$$= 106.64$$

$$P_{4719} = w_{food}*P_{food} + w_{cig}*P_{cig} + w_{shoe}*P_{shoe}$$
$$= 0.2*P_{food} + 0.2*P_{cig} + 0.6*P_{shoe}$$
$$= 0.2*105.6 + 0.2*110.8 + 0.6*125.0$$
$$= 118.28$$

Deflators

- The price deflators for these ISIC retail classes are:
- For ISIC 4711 : 106.64
- For ISIC 4719 : 118.28