Extending the Danish CPI with scanner data – A stepwise analysis

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Agenda

1. Motivation for the analysis
2. The main findings
3. Future analyses
4. Implementation

1. Motivation for the analysis

- To understand the **change of price concept** and the key differences between traditional price collection and scanner data.
- To investigate the **minimum necessary change needed** when implementing scanner data to our traditional production system. (Definition of the item basket)
  - Identification of methods that can **limit the amount of missing prices**.
  - Identification of methods that can **limit the amount of data in a manually maintained** item basket based on scanner data.

2. Main Findings – change of price concept

Turnover based prices from scanner data different from traditional collected shelf prices

Example of scanner data from the supermarkets

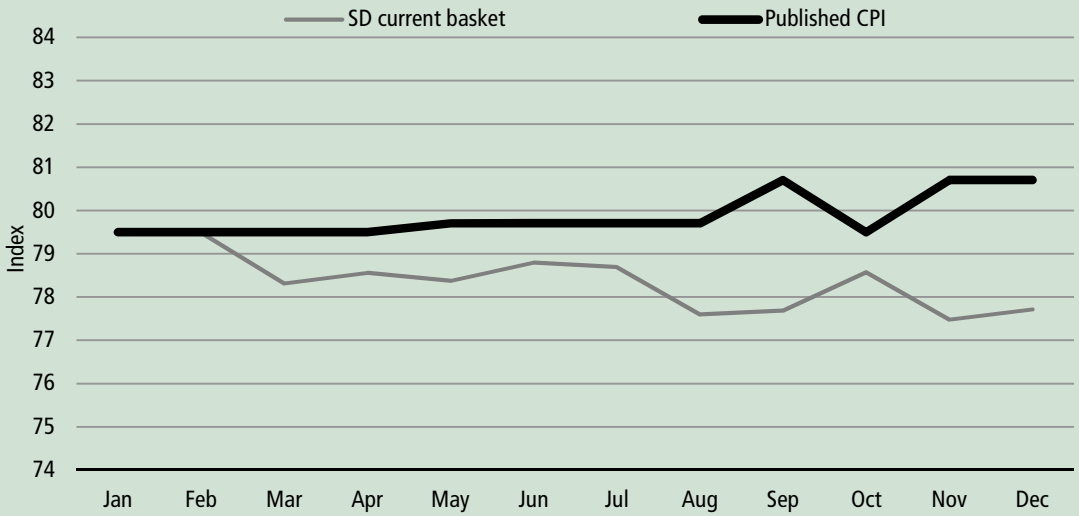
Date	Store	EAN number	Turn-over	Vol-ume	Unit	Quantity per unit	Product number	Product description
1104	7894	2920080800007	3402,70	211	Gram	300	910076003	Sliced bacon 2x150 G.
1104	7895	2920080800007	2119,65	163	Gram	300	910076003	Sliced bacon 2x150 G.
1104	7896	2920080800007	1516,05	108	Gram	300	910076003	Sliced bacon 2x150 G.
1104	7897	2920080800007	1478,13	105	Gram	300	910076003	Sliced bacon 2x150 G.
1104	7214	2921056000005	302,50	14	Gram	200	911056001	Chicken Fillet
1104	7215	2921056000005	102,50	5	Gram	200	911056001	Chicken Fillet

Price = Weekly turnover per ean / Weekly volume ean = Weekly average unit price

The main difference is inclusion of volume discounts

Scanner data based CPI – Rice

Presumably a generic product and price stable category – Products chosen by DST



Current basket in scanner data vs. Published CPI

- The published CPI is based on single rice packages that is often not on discount
- The scanner data based CPI includes products bought on volume discount

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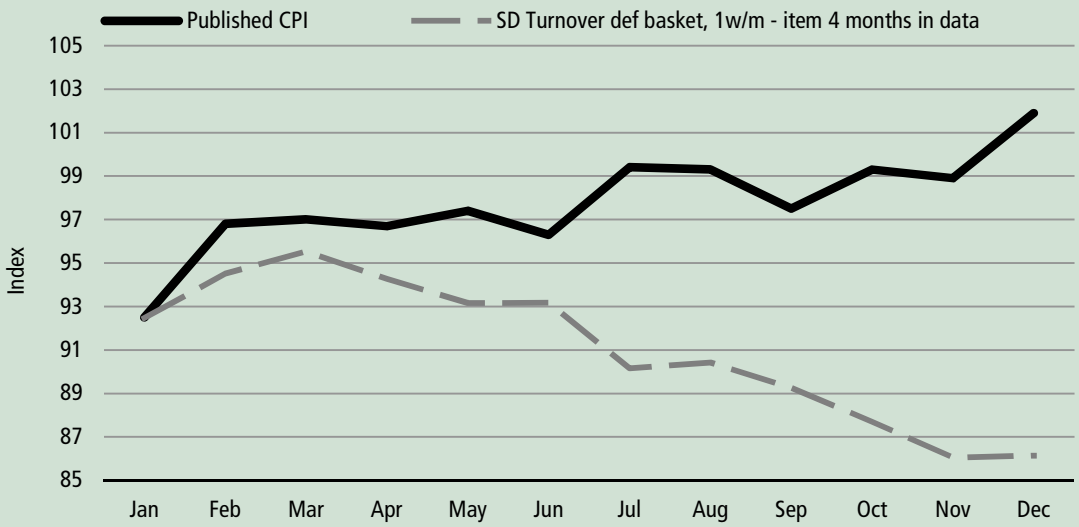
2. Main Findings – definition of item basket

- Results that will be implemented:
  - Two weeks of data per month (is much better than one week)
  - Aggregating data to supermarket chain level
  - A turnover criteria securing that only important products are included

Scanner data based CPI – Minced beef

A product often bought on volume discount



SD turnover def basket (1w/m) vs. Published CPI

- Downwards bias (EANs leaving the basket on discount)

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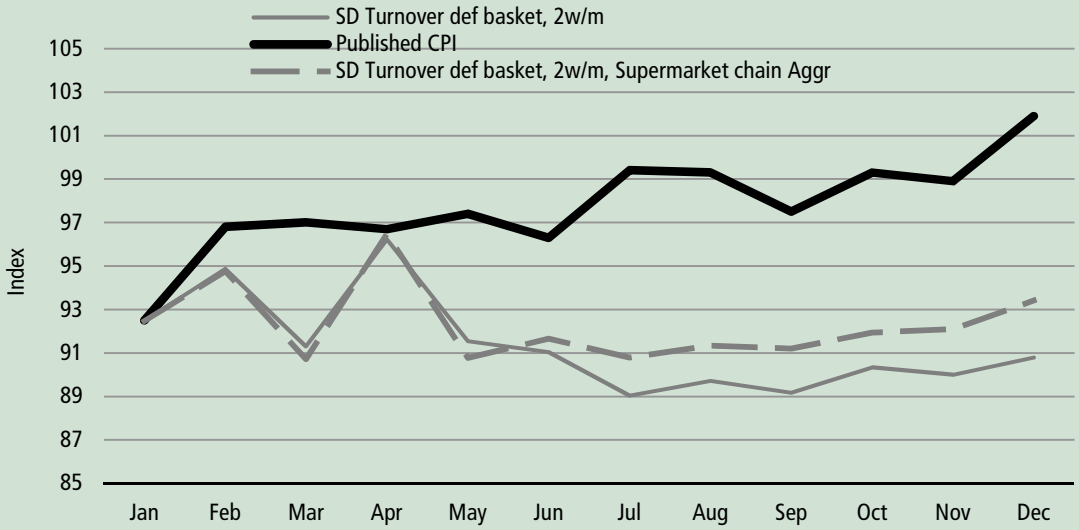
Scanner data based CPI – Minced beef

A product often bought on volume discount



SD turnover def basket, 2w/m data + chain aggregation vs. Published CPI

- If 2 weeks of data per month is used instead of 1 week per month the missing prices are limited and the downwards bias is limited
- If eans are also chain aggregated the missing prices are limited even more and the downwards trend is limited even further.

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2. Main Findings – definition of item basket

- Results that leads to rethinking of basket definition criteria
  - The top three products per supermarket chain is often too restrictive
  - The 50% turnover share inclusion can be too restrictive
  - The 4 months in basket criteria needs further refinement

3. Future analyses

- Coicop specific criteria for item selection
  - Specific criteria were attrition of ean's are high
  - Specific criteria for seasonal items

- The semi flexible basket system
  - Fixed basket as basis
  - Monthly maintenance compensating for:
    - Attrition (persistently missing in scanner data)
    - Products that have many missing prices through the year (stock outs)
    - Products that has become less representative over time

4. Implementation

- Test system with scanner data in production by 2013 analysing;
  - The production flow
  - Index behaviours
  - Comparison to current CPI

- Expecting to publish scanner data based CPI by 2014