Currency effects in the Danish and Swedish inflation

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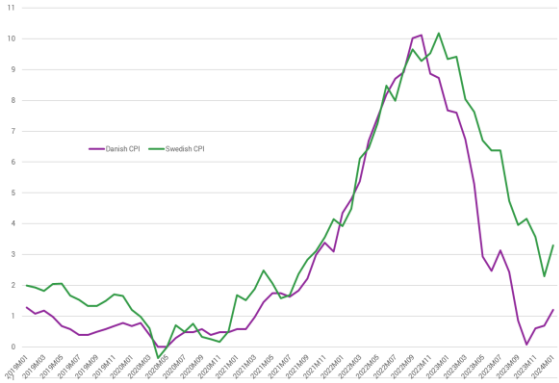
Background

Denmark and Sweden chose through popular vote to stay outside the Euro system by early millennium, despite their significant trade with the EU.

Denmark applies a fixed currency exchange rate (pegging) to the Euro while Sweden has a floating currency.
Over the course of time, the two countries' HICP inflation have shown different movements and levels, as studied by Norberg (2023) for several subgroupings.

On aggregate level, Danish inflation (HICP) has many times been below Eurozone average inflation (HICP) while Swedish inflation (HICP) has been close to and slightly above the Eurozone average inflation on several occasions, likely affected by the Swedish currency (SEK) which has experienced clear depreciation for a long time.



A simple pass-through model

A simplified inflation transmission model was specified as a response of inflation to change in money supply and change in import price index, per country *j*:

$$\pi_{j,t} = \alpha_j + \beta_1 \Delta M_{j,t} + \beta_2 \Delta imp_{j,t-1} + B_j + \varepsilon_{j,t}$$

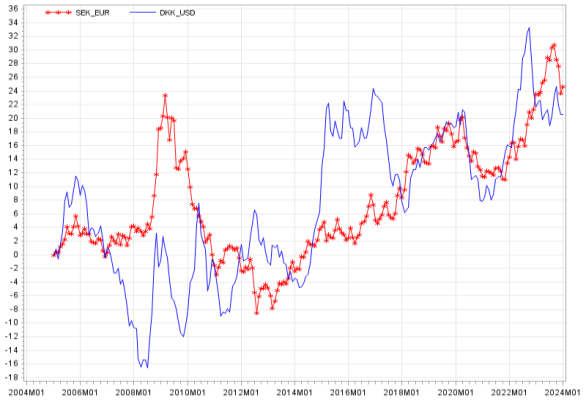
A reduced model was estimated for inflation of food (COICOP01) with import price index for food (CPA10) as only predictor, per country *j*:

$$\pi_{j,t} = \alpha_j + \beta_1 \Delta imp_{j,t-1} + B_j + \varepsilon_{j,t}$$

Some insights from the analysis

It was observed from data and the estimations that

- Import price index had a significant tie to inflation, as expected in terms of causality, although to a seemingly varying extent in transmission time and over time. Sometimes, a relationship between CPI and Import Price index does not appear to be.
- Money supply likely not the driving factor in this case (expected).
- The estimation rendered moderate fit with serially correlated residuals and heteroskedasticity, for the aggregate series.
- The multimodality of inflation (low/high) affects model fit and residuals - unclear if complex modelling would add precision.
- The Swedish CPI shows an accentuated higher inflation than the Danish CPI specifically around year 2023 and onwards.
  A breakpoint parameter does not help: a level shift approach not sufficient to capture dynamics in transmission.
- Increasing import prices over time and (slowly) depreciating currency create difficult-to-asses interdependencies: high inflation adds a significant volatility to estimations and could result in spiral effects, reducing correlations between variables.
- A reduced model of import price index of food (CPA 10) as predictor of food inflation (COICOP 01) had even less explanatory power.



References (selection)

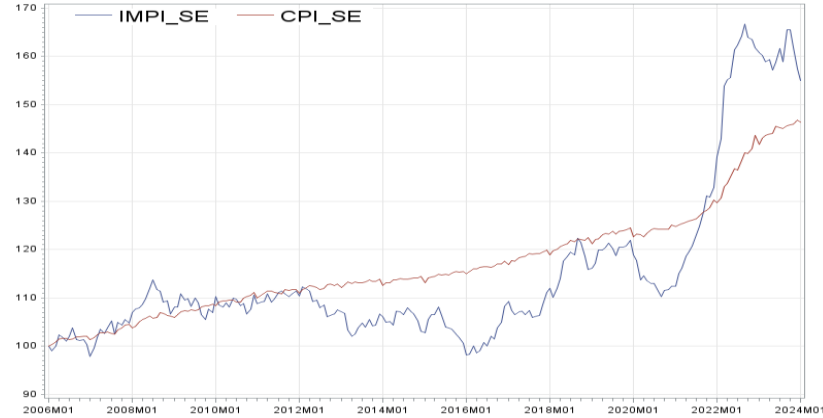
European Union (2024). Drought in the Mediterranean – January 2024 Commission's Joint Research Center on (JRC) report
Hamilton (2012). Import Prices and Inflation
Norberg (2023). Macro Analysis of the Swedish HICP

Data from

Statistics Denmark www.dst.dk
Statistics Sweden www.scb.se
Danmarks Nationalbank https://www.nationalbanken.dk
Sveriges Riksbank www.riksbank.se

Some insights on macro level

- Presumably some methodological issues prevalent that affect the relationship between import prices and CPI, especially at lower levels such as food, which may also affect comparability between countries. If so, this is likely to affect modelling.
- Likely tendencies of consumers to substitute away from goods that have an increase in relative prices: sensitive index methods like multilateral methods may be a solution to capture changes in consumer preferences and avoid within-year basket bias.
- Higher inflation clearly impairs potential for modeling.
- Likely small or very weak potential for isolating "import share" in aggregate CPI.



Country	$\Delta M_{j,t}$	$\Delta imp_{j,t-1}$	B_j (2022M01)	α_j	R2 (adj.) | DW| White's
Denmark	β_1 =-0.00931 (0.01368)	β_2 = 0.23506 (0.01293)	B_j = 1.86939 (0.22962)	1.16899 (0.104)	0.7765 |0.19| 26.06 (0.001)
Sweden	β_1 = -0.04061 (0.01116)	β_2 = 0.10760 (0.00821)	B_j = 3.30747 (0.25161)	1.69977 (0.117)	0.8421|0.426| 22.86 (0.0036)