

International comparisons

Comparability of inflation statistics between countries needs to improve

Lately, users of economic statistics have pointed out major differences in price progression between Sweden and other European countries for a number of goods in CPI and HICP. Differences that are due to varying conditions or different choices of method rather than actual price trends make the statistics less useful for international comparisons. Statistics Sweden finds that the calculations of inflation measures could be better harmonised and is pursuing this issue in the European cooperation.

Statistics Sweden works continually on improving the Consumer Price Index, CPI, based on government guidelines and, as far as possible, based on views expressed by the CPI Board and users of the statistics^{1,2}. In the past decade, focus has chiefly been national and on issues such as broadened use of electronic transaction data (see the article “Large data volumes are the new price catalogue” in this issue of Sweden’s Economy) and improved price measurement of the cost of living in houses and tenant-owned apartments. One issue that has been lurking in the background and which has moved higher up the agenda in the past year is harmonisation between countries.

Several users of price statistics have pointed out that there are considerable discrepancies in price progression between countries within certain areas – a factor that is difficult to explain in any way other than by choices of method³. The comparisons in such cases often pertain to HICP (Harmonised Index for Consumer Prices) – an inflation measure that most European countries calculate based on a common framework. The HICP regulations have been developed since the mid-1990s with the aim of harmonising statistics within the EU, and today they only permit a limited number of methods which, theoretically, ought to give relatively consistent outcomes. In Statistics Sweden’s view, a gradual harmonisation has occurred continually over a long period of time. If longer time series are analysed, “historical” shortcomings in harmonisation are also evident. Today, the

calculation method is much more harmonised than it was 10 or 20 years ago, albeit still with shortcomings. Choice of time period is therefore not insignificant when commenting on harmonisation today.

It is however not certain that a higher degree of harmonisation will be achieved ahead, because access to new data sources, of better quality, varies considerably in Europe. Sweden is therefore currently working more actively for further harmonisation in Europe, primarily within certain specific product areas.

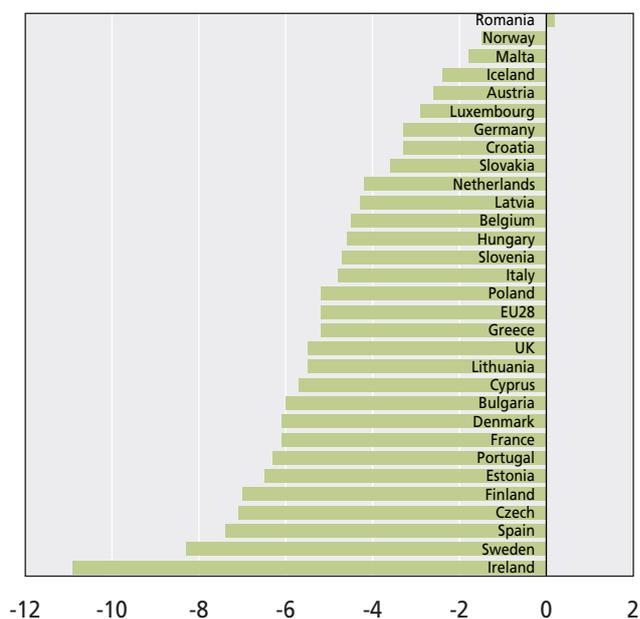
Broad spread in Europe in a handful of areas

The analyses performed both by Statistics Sweden and various users indicate that more distinct shortcomings in harmonisation are limited to relatively few commodities. This refers mainly to TV sets, computers, phones, apparel and pharmaceuticals. To a great extent, these goods are imported from non-EU countries, which ought to indicate a more similar price progression within the EU. Together, they equal approximately 8 percent of domestic Swedish consumption, i.e. of the weight of the CPI basket in 2020.

The chart below shows, as an example, differences in inflation figures, i.e. the 12-month change, between countries for the COICOP group that includes TV sets and computers⁴. The group has both a relatively large significance in the CPI basket and a large relative difference in inflation figures in Europe.

Average inflation figures, 2009–2019

COICOP 09.1 Audiovisual and photographic equipment and data processing equipment, percent



Source: Eurostat

1 CPI guidelines are found in the inquiry SOU 1999:124 Consumer Price Index, and in the Government’s response thereto; PROP. 2001/02:1 ANNEX 4, “New guidelines for CPI”.

2 Read more on the Consumer Price Index Board here: <https://www.scb.se/om-scb/scbs-verksamhet/rad-och-namnder/namnden-for-konsument-prisindex/>

3 See e.g. the Riksbank’s “Monetary policy report February 2020”. <https://www.riksbank.se/en-gb/monetary-policy/monetary-policy-report/2020/monetary-policy-report-february-2020/pdf>

4 COICOP is a common European classification system and stands for Classification of individual consumption by purpose

Sweden is among the countries that have had the very lowest price progression for COICOP 09.1. It is remarkable that neighbouring country Norway is among the countries that report the least negative price progression. Note that the inflation figures in the chart are averages for a 10-year period and they of course vary between different years.

Difficult to distinguish price from quality

There is great international consensus on the view that a consumer price index should measure the “clean” price progression over time and hence not be affected by differences in quality between new and outgoing products in “the basket”. The current guidelines are however less precise on how this should be achieved in all different situations and for each product area.

Statistics Sweden currently uses a handful of methods to judge what constitutes a change in price, and a change in quality. All of them are recommended in international manuals, approved under European regulations and have been decided in consultation with the CPI Board in Sweden.

Example – what exactly is the “clean” price change?

In June 2020, Statistics Sweden notes the price of SEK 10,000 for a TV set of Model A that has been on the market for ten months. In July and August, the price of SEK 5,000 is noted for Model A, which is put on sale. In August, at the same time there is also a newly introduced potential replacement, Model B, in the store which is sold for SEK 10,000. In this case, Statistics Sweden needs to determine which of the models are to be included in the inflation calculations and evaluate any difference in quality between the models if a switch is made. Some perceivable options are:

- The entire price difference (i.e. from SEK 5,000 to SEK 10,000) is explained by improved quality → no change in CPI
- Part of the price difference is explained by improved quality → some increase in CPI
- No difference in quality → the entire price difference comes out as an increase in CPI
- The quality is considered to be poorer → more than the entire price difference comes out as an increase in CPI
- No switch is made → if nobody buys a new product, the reduced (sale) price of the existing model is still used in August

In practice however there are a number of difficulties in calculating the “clean” price change for most commodities. Services are often simpler because the fundamental content changes less over time. For example, TV sets undergo a relatively high rate of technological development, with the introduction of new models on the market more or less each month. The price that a consumer has actually paid for a new TV model is relatively easy to observe. It is more difficult to judge whether elements of the generally higher price are due to the new model really being better than the old one, and in that case exactly what is better and by how much, expressed in kronor. In connection with this, features

that are for instance “useful” need to be distinguished from those that are model-related in new products. Often, there is also an absence of reliable information on the extent to which newly introduced models are purchased, while at the same time the price is often reduced for older established models when new ones are introduced.

National conditions complicate international harmonisation

For the same group of commodities, such as TV sets for example, several different methods are used in Europe today to assess what constitutes price progression and improved quality. Also, a number of methodological choices are made in practice that can affect the recorded price progression even if the same method “on paper” is used in two countries.

Some fundamental differences between countries are varying resources for producing statistics and legal disparities, which entail different possibilities to collect the data needed to attain good quality in the inflation statistics. Price measurements for the same type of goods are designed in different ways depending on national conditions. It can be a matter of different sample sizes, different rules on when and how product switches are made and of quality adjustments being made in a more or less standardised way. If a country has access to price and sales data for all TV sets from a company, the price progression can be calculated with greater quality compared with “traditional” price collection whereby statistical agency staff visit physical stores and collect prices for a relatively small sample.

The quality adjustments that occupy a price statistician on a day-to-day basis are such that are made during the year, due to individual products declining in popularity or being sold out, and which are thus in need of replacement. However, achieving broader harmonisation of price indexes in Europe requires looking at more than these methods alone. Ultimately, it is the combination of several choices of method as a whole based on different conditions that affects the inflation statistics.

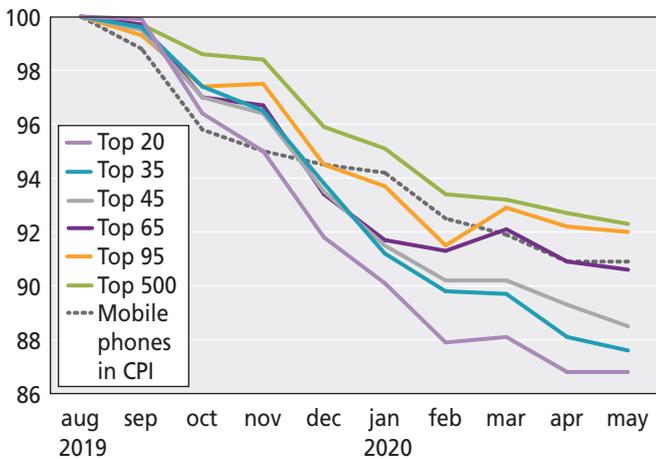
Because the HICP regulations are relatively general in certain areas, national differences – for instance in terms of chaining frequency – still affect how often new samples are drawn, which in turn governs how many switches need to be made during the year. In Sweden, the product and store sample is renewed on a greater scale at the turn of each year, and in connection with this an assumption is made as a rule that the entire price difference between the baskets of both years is explained by a change in quality (see the article Impact of judged quality improvement on price indexes in this issue of Sweden’s Economy). Further differences in choice of methodology between countries can also be found in price collection and classification.

Example 1 – difficult to measure price progression without sales volumes

To illustrate the problems associated with different choices of method, a diagram is provided below with the calculation method monthly chaining for mobile phones. In the Swedish CPI, monthly chaining is used as a calculation method for mobile phones, computers and computer accessories. With the exception of the dotted line, the data in the example is however not based on CPI data, but has been collected during the period August 2019 through May 2020 from a Swedish price comparison site.

In the diagram, different index outcomes are shown depending on the size of the product sample. Despite the relatively short time period (10 months) there are indications that the size of the sample affects the index series. In the diagram below, we see that the index progression is consistently higher with a larger sample. If the 500 most popular models are included, this leads to a higher progression than an equivalent calculation based on the 95 or 20 most popular models. Hence, the larger the sample, the greater the weight of the products that do not sell particularly well and that have a weaker downward price trend. As a reference series, the official index series from CPI has also been inserted.

**Monthly chaining for mobile phones:
product sample**
Index Augusti 2019=100



Source: Consumer Price Index

Data up to and including may 2020

The objective of CPI is to measure prices of products that are actually purchased and, in this case, there is a risk that a large sample would exaggerate the estimated price progression for the target population. In the absence of information on both price and sales volumes, it is in practice difficult to measure the price progression for a representative sample.

Example 2 – prices in one or all stores?

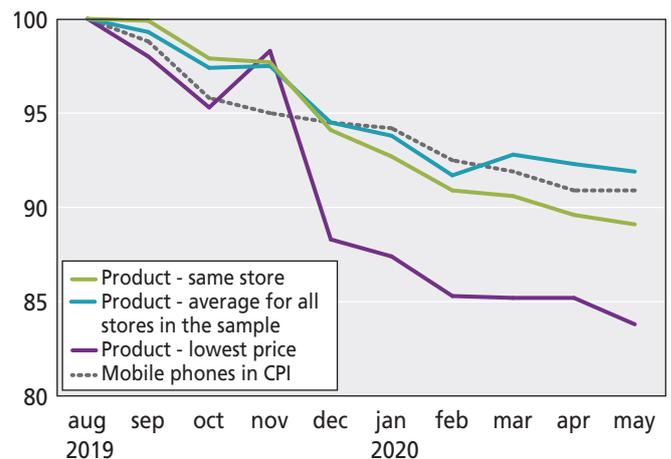
Another methodological choice is whether or not price progression for goods and services should be followed in the same stores over time. It could be argued that an online consumer today has relatively good possibilities of making informed decisions and substituting between stores. This would favour following the average price of a product in

all stores in the sample, with varying store weights from one month to the next. Another option, in the absence of weights, is to measure the price in the store(s) that happen to have the lowest price each month. If consumers substitute towards stores with lower prices, this comes out as a price reduction.

On the other hand, it could be argued that there are considerable differences in service level between different stores, and that price effects arising from consumers substituting between stores ought therefore not to be included.

The diagram below shows how the product definition can also affect which price progression is measured. When the measurement of a product follows an average price for all stores (“product – average for all stores in the sample”), the index will be higher than when the measurement follows a specific product in the same store over time (“product – same store”). Today, measurement in CPI is performed according to the latter method. If it instead resembles a rational consumer who, all the time, chooses the lowest price on the comparison site (“product – lowest price”), the price progression will, as expected, be lower.

**Monthly chaining for mobile phones:
product definition**
Index Augusti 2019=100



Source: Consumer Price Index

Data up to and including may 2020

The above are examples of national conditions; differences in practical approach and various fundamental considerations could cause different results in the official statistics.

The documentation available today on different choices of method in the European countries unfortunately does not provide a sufficiently detailed picture of potential methodological differences in the statistics.

Statistics Sweden is pursuing the issue internationally

Within the HICP cooperation, harmonisation is an issue at largely all working meetings. In terms of quality adjustments, in the past few years discussions have revolved around, for instance, cars, for which price progression in Eastern and Western Europe has diverged

During 2019–2020 in the various HICP forums, Statistics Sweden has worked actively to improve the evident problems present in harmonisation between countries.

Issues that Statistics Sweden has pursued within the HICP cooperation

- Sweden has proposed that harmonisation efforts should focus on product groups with a high weight and with the greatest divergence in price progression.
- An in-depth process to identify methods will now be implemented for problematic product groups. Sweden is involved, devising a survey that will be sent to all Member States.
- Sweden has also stressed the importance of following up on whether countries actually implement Eurostat's recommendations. To attain harmonisation in the long run, it is crucial to understand why countries choose not to implement Eurostat's recommendations.

Harmonisation will probably be a standing item on the international agenda in future too. In some countries, electronic transaction data constitutes an increasingly important data source, while many other countries primarily continue to rely on visiting stores. In the Swedish CPI, transaction data currently makes up approximately 35 percent. New data sources often enable observing many more prices and also quantities. This enables the use of better index calculation methods which, in turn, could reduce risks of systematic errors. The countries of Europe have varying economic, legal and cultural conditions for improving statistics and will need to develop at different rates. At the same time, it is important not to forget international comparability – an aspect that needs to remain the responsibility of both Member States and the European cooperation.

Contact persons: Emanuel Carlsson, +46 10 479 48 11 and Peter Nilsson, +46 10 479 42 21