

# The Harmonisation of Quality Adjustment Practices in the European Union

*Paper by Don Sellwood  
Eurostat*

**Summary:** This paper outlines the evidence for differences between CPIs in the European Union on account of different practices of quality adjustment and the steps which are being taken to reduce these.

The criterion on price stability referred to in Article 109 of the Treaty on European Union (Maastricht) requires that "a Member State has a price performance that is sustainable and an average rate of inflation, observed over a period of one year before the examination, that does not exceed by more than 1½ percentage points that of, at most, the three best performing Member States in terms of price stability. Inflation shall be measured by means of the consumer price index on a comparable basis, taking into account differences in national definitions". Eurostat set in train a programme of work to examine the differences in practices followed by Member States in constructing their CPIs and enacted a legal framework within which to require Member States to produce CPIs on a comparable basis.

Quality Adjustment practices in CPIs differ between Member States. Each National Statistics Institute (NSI) has developed its own solution at the expense of considerable effort over many years. None would claim to have a satisfactory answer and all would be willing to change if a better solution was offered. However, many would say that there are no remotely satisfactory answers available on which to base realistic operational procedures. It is in this context that Eurostat must try to establish whether differences in practices lead, in themselves, to differences in the measured rate of consumer price inflation. And, if so, what should be done to reduce such non-comparability between CPIs.

It may seem obvious that different quality adjustment procedures will produce different results but there is not much empirical evidence to show how big these effects might be in practice. NSIs do not attempt to provide estimates of the scale of quality changes as this would require them to compute their CPI's in different ways in order to see how adjustments have affected the results. Independent estimates of quality change are of little value. It is not possible to avoid the problem of quality adjustment and all CPIs must, explicitly or implicitly, include such adjustments. Without a detailed understanding of the adjustments that are actually made it is not possible for outside observers to say what their effect has been. Critics of a CPI may be able to say that it should have reflected an X% improvement in quality over a given period but they cannot say that a CPI has not reflected such an improvement. Nevertheless, it is worth noting that X is often believed to be as much as one percent per annum (a range of 0.2-0.6 points has been recently quoted for the US CPI).

To have some idea of the likely scale of the effects of different quality adjustment practices Eurostat has followed two lines of enquiry. One was to compare the measured price movement of goods that are traded extensively in most Member States (motor cars) to see whether differences between these price movements seemed "reasonable". That is, after allowing for the more obvious reasons for divergences (e.g. exchange rate fluctuations). The other, was to ask NSIs to compute for a range of goods the difference between the price index used for the CPI and the change in price under the assumption of no change in quality. The major part of the difference between the changes in simple average prices (unit values) and the corresponding price index is likely to result from the procedure for quality adjustment. This thus provides some indication of the scale of adjustments made.

The former study showed wide divergencies between national CPIs in the movements of motor vehicle prices beyond that which might be expected. The latter study revealed a number of instances of implicit allowances for quality change well above what most observers might expect. It also suggested some evidence of under allowance for quality in one CPI but the more detailed analysis necessary to confirm this was not carried out. These studies were necessarily crude and for this reason and because of the risk of inappropriate inferences being drawn from them there are no plans to publish them. They, nevertheless, suggest that it is safe to assert that quality adjustment practices are a major source of non-comparability between the CPIs of the European Union.

Under the above mentioned legal framework Eurostat is empowered, subject to the collective approval of NSIs, to lay down rules for the compilation of Harmonised Indices of Consumer Prices (HICPs which are distinct from national CPIs) where current practices lead to non-comparable results. Since this is the case with quality adjustment, priority has been given to drawing up appropriate rules. It has been accepted there will be neither the time nor the resources to solve the "problem of quality adjustment". Eurostat, nevertheless, sought first to define quality change and then to identify and agree on best practice for adjusting for it. Despite a positive response from the NSIs it soon became apparent that discussions would founder between the Scylla of practice without principle and the Charybdis of conceptual incoherence. Attempts to define quality raised the same problems that this has always raised and solutions based on a particular definition raised objections when viewed from other definitions.

The approach has therefore changed to one of seeking to reduce the diversity of practice by first eliminating that which can be agreed as the poorest of practice. Further, to treat differentially those areas where quality changes are thought to be important from those where it is regarded as unimportant or impossible to quantify. This may be equivalent to saying "We admit that we do not know precisely what quality change is or how to allow for it but we believe we know enough about where it occurs to be able to define sufficiently objective procedures to constrain NSIs to treat it in similar or less dissimilar ways than is currently the case".

The initial aim is to define separate but similar rules for:

- i) rapid quality change items, - motor vehicles (new and used cars), TV's and other high tech' goods,
- ii) medium quality change items, - washing machines and their like,
- iii) low quality change items, - clothing and furniture.

The rules will first attempt to constrain the use of extreme default practices for quality adjustment. That is either assuming price differences are entirely due to quality difference (linking) or assuming there is no price associated with a change in specification. NSIs would thus be obliged to take a specific view of each quality change. The possibility of central provision of default options, based on estimates obtained from those NSIs which have appropriate data sources, will be considered.

It is also likely that NSIs will be asked to keep track of the effects of quality adjustments, at least on selected items. This might involve the accumulation of the adjustments made or the computation of a control statistic such as the divergence of the price indices from movements in simple average prices mentioned above. The aim would be to provide NSIs and Eurostat, in the most efficient and cost effective way, with an indication of compliance with the requirement of the rules. Such evidence should also contribute to the establishing of central default values. It will help to identify good practice and thus to provide information by which to refine the rules over time.

Any rule for quality adjustment cannot be set in isolation from other differences in practices in CPI construction. The number of quality changes identified will depend not only on the numbers of quality changes occurring in an economy but also on the definition of quality change actually used and on the items actually selected for pricing. Some NSIs favour tight specifications of items where others favour loose specifications. Some NSIs make strenuous efforts to maintain sample levels whereas other may allow considerable attenuation. NSIs using chain indices may update their model selections at different rates from those with ordinary Laspeyres indices. Such updating may imply different evaluations of quality changes between models. Eurostat, with NSIs, will have to look at these different practices and legislate where appropriate. It is likely that harmonisation will be a gradual process of reducing non-comparability with consistency and coherence achieved by later rules based on the evidence provided by the application of earlier rules. That is, much the same way as many legal systems operate with initial laws refined by case law.

In short the approach to quality adjustment in the European Union is not to continue the search for "the algorithm" which will replace existing algorithms but to follow the heuristic of eliminating practices that are, by common agreement, wrong. In this way it is hoped to institute a process whereby NSIs can discover best practice by sharing methods and comparing results of their application in similar circumstances. Eurostat, nevertheless, hopes to carry out further studies on the use of hedonic methods for motor vehicles and for high tech' durables as well as looking at alternatives, such as the use of consumer panels, to evaluate quality changes.

This paper raises the following points for consideration:

- a) The propositions that NSIs and independent researchers have failed to determine whether or not CPIs are understated or overstated on account of their treatment of quality changes;
- b) That international comparisons of price changes in those items where quality is changing most offer the prospect of determining the extent of which CPIs may be under or over stated on account of quality changes;
- c) That it is possible from within CPI systems to detect bias on account of quality adjustment;
- d) That it is appropriate to tackle the "problem of quality adjustment" in CPIs by a process of elimination, prohibiting practices that, on the basis of "expert" consensus, are least acceptable.