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## PRESS RELEASE

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### **Assessing the Gap between Observed and Perceived Inflation in the Euro Area: Is the Credibility of the HICP at Stake?**

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Although the introduction of the euro notes and coins in January 2002 went remarkably smoothly, the euro cash changeover nonetheless generated a great deal of debate regarding its impact on prices. The prevailing impression among a vast majority of consumers is that the introduction of the euro triggered exceptional price increases. Surveys reveal that fears of such increases already existed before the euro was introduced, and those fears became more acute at the time of the actual changeover. Even now, five years after the introduction of the euro notes and coins, that feeling still persists. This topic recently attracted considerable attention once again, partly because of Slovenia's accession to the euro area on 1 January 2007. Nevertheless, inflation measured by the harmonised index of consumer prices (HICP) has remained moderate since the changeover, certainly in view of the fact that crude oil prices have soared in the past few years, something which is unrelated to the introduction of the euro. More specific estimates of the impact of the changeover on inflation, e.g. those produced by Eurostat or various national central banks of the Eurosystem, including the National Bank of Belgium, also indicate that the introduction of the euro had only a minor impact on inflation in 2002.

The working paper examines this issue by making use of the EU consumer survey, because that offers qualitative information on inflation perceptions. In the past, various studies based on simple chart analysis for individual euro area countries have already revealed that those inflation perceptions have deviated (upwards) from HICP inflation since 2002. The added value of this paper lies in the formal econometric testing of whether, following the changeover, a break in the link between actual inflation and perceived inflation did occur. Furthermore, the paper examines this for 11 of the 12 euro area countries; in the case of Luxembourg the time series was too short to be included in the study.

The methodology used comprises the following three elements. First, the EU balance statistics on inflation perceptions are standardised on the basis of data for the reference period (1996-2001), which deliberately excludes the period following the changeover. This puts the re-scaled balance statistics on the same scale as HICP inflation. Next, the paper examines whether both follow the same long-term pattern, by testing whether the difference between the re-scaled balance statistics and HICP inflation is stationary. This is done by testing for the existence of a unit root. If the null hypothesis of a unit root can be rejected for this difference (indicating that the difference is stationary), the conclusion is that the re-scaled inflation perceptions and actual inflation followed the same underlying trends during the reference period. Since unit root tests for relatively short time series - in the first instance, only data for the six years of the reference period are considered - tend to fail incorrectly to reject the null hypothesis of a unit root, the observations for all euro area countries are not only examined individually, but also pooled to form a panel. Finally, the analysis period is extended by adding data from January 2002 onwards. If the changeover did indeed cause a break in the link between actual and perceived inflation, then the difference between the two inflation measures will no longer be stationary when post-changeover data are also considered. In order to examine in more detail the specific role played by the introduction of the euro, identical tests are conducted on three EU countries which did not join the euro area, namely Denmark, Sweden and the United Kingdom.

The results of the study can be summarised as follows.

For the reference period it was possible to reject the unit root hypothesis for both the panel comprising the euro area countries and the panel comprising Denmark, Sweden and the United Kingdom. As expected, however, that was not always the case for the individual countries, regardless of whether or not they were part of the euro area. Overall, that implies that the re-scaled balance statistics concerning inflation perceptions during the reference period followed a pattern similar to that of HICP inflation itself. While this was also the case for the panel comprising Denmark, Sweden and the United Kingdom when post-2002 data are included, that is no longer valid for the panel of euro area countries. On the contrary, once the inflation figures and perceptions for a number of months following the changeover (in practice, from May 2002) are included in the analysis, it is no longer possible to reject the null hypothesis of a unit root, and that situation persists when more observations are gradually added (in the analysis up to the end of 2005). These results point very strongly towards a changeover-induced break in the link between inflation perceptions and HICP inflation, and therefore endorse the conclusions previously drawn on the basis of the chart analyses. They also confirm the persistence of the divergence in perceptions.

The tests also show that the break in the euro area is fairly homogeneous for consumers with varying socio-economic characteristics. This finding is at odds with the fact that, in the relevant literature, it is sometimes postulated that the break in perceptions occurs primarily among certain categories of consumers, e.g. consumers with low incomes, or elderly people. Another theory sometimes put forward to explain the break is that consumers form their inflation perceptions primarily on the basis of frequently purchased goods or services, and during the changeover period those prices rose faster than overall inflation. The analysis conducted does not confirm that theory either. In fact, if inflation perceptions are no longer viewed by reference to overall HICP inflation but instead by reference to the rate of price increases for a sub-group of frequently purchased goods and services, perceptions are also seen to diverge in the period following the changeover.

Nor is the break attributable to methodological differences in the measurement of inflation according to the HICP as opposed to the national CPIs. That would be possible if inflation perceptions were based mainly on the movement in the national CPI, which is often more familiar to the general public than the HICP. If the national CPIs are taken as the reference for perceptions, instead of the HICP, there is still an undeniable break in the link between inflation perceptions and the inflation actually measured. More particularly, it emerged that the exclusion from the HICP of housing costs in the case of owner-occupied housing does not explain the higher perceived inflation, even though property prices in many euro area countries have risen significantly faster than HICP inflation in recent years.

The general conclusion is therefore that the changeover led to a substantial break in the formation of inflation perceptions, which has nothing to do with the accuracy or credibility of the HICP in itself. Given the prominent role of the HICP in the monetary policy strategy of the Eurosystem, that last finding is an important outcome.