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**Persistent low inflation in the euro  
area: Mismeasurement rather than a  
cause for concern?**  
- Daniel GROS, CEPS -  
**MONETARY DIALOGUE**  
**February 2018**

**In-depth analysis for the ECON Committee**





**DIRECTORATE GENERAL FOR INTERNAL POLICIES**  
**POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY**

# **Persistent low inflation in the euro area: Mismeasurement rather than a cause for concern?**

**IN-DEPTH ANALYSIS**

## **Abstract**

The huge literature on the causes of the persistent weakness in inflation in the euro area has not identified one single key factor. Moreover, inflation has also been lower than expected in many advanced countries. Low inflation expectations seem to have played an important role in reducing wage demand, both in the US and the euro area; but a residual output gap also contributes.

The concerns about low inflation seem overblown. The HICP (Harmonized Index of Consumer Prices) used to measure inflation in the euro area differs from the indices used in most advanced countries in that it does not account for the cost of owner occupied housing. This omission has a considerable impact on measured inflation and can explain most of the difference between inflation in the US and in the euro area. If the HICP were to incorporate the available estimates of inflation in owner occupied housing, measured inflation would be close to 2 %.

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## EXECUTIVE SUMMARY

### Background

There exists a huge literature on the causes of the persistent weakness in inflation in the euro which has not converged on simple conclusions. Moreover, inflation has also been lower than expected in many advanced countries. There is some dispute whether this is due to a global factor (increased supply of cheap goods from China) or a parallel development with different roots in different countries.

Low inflation expectations seem to have played an important role both in the US and the euro area; but a residual output gap also contributes. The precise amount of remaining economic slack is difficult to determine in absolute terms. Alternative measures of economic slack (like the U6 unemployment measure<sup>1</sup>) indicate more room for growth, but all these measure usually evolve together.

There is little evidence that continuing low inflation has had a measurable economic cost. Growth has accelerated; and low long term inflation expectations are allowing governments to finance themselves at low nominal rates (much below the growth rate of nominal GDP).

### Findings

- Inflation seems under-estimated in the euro area.
- The HICP (Harmonized Index of Consumer Prices) used to measure inflation in the euro area does not account for the cost of owner occupied housing (OOH).
- By contrast the indices used in most advanced countries include owner occupied housing.
- This omission of OOH in the HICP has a considerable impact on measured inflation.
- If the HICP were to incorporate the estimates of inflation in owner occupied housing made available recently by Eurostat, measured core inflation would be close to 2 % (and close to the US level).
- On a globally comparable index the ECB would thus have reached, or be very close to reaching, its price stability target. The continuation of non-standard policy measured might thus not be necessary any more.

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<sup>1</sup> U3 is the official unemployment rate. U5 includes discouraged workers and all other marginally attached workers. U6 adds on those workers who are part-time purely for economic reasons.

## 1. GENERAL INFORMATION

### KEY FINDINGS

- The relationship between economic slack and inflation is less tight than before, but it has not broken down.
- Inflation seems to react little to reductions in unemployment.
- The omission of owner occupied housing from the HICP is peculiar to the euro area.
- If the HICP were to include owner occupied housing measured inflation would be close to 2% now.

Inflation has behaved differently from what was expected already since the start of the financial crisis. At first, the surprise was that prices did not decline strongly during the Great Recession. This was dubbed the ‘missing deflation’. But as the recovery continued (in the US uninterrupted since 2009, in the euro area since 2013) the surprise was that inflation did not accelerate as unemployment declined. The essence of this ‘missing inflation’ puzzle is that unemployment has now returned to pre-crisis levels, but inflation has not.

These two ‘puzzles’ have generated an enormous empirical literature, much too large to be surveyed here. All that can be achieved in this short contribution is to discuss some of the main factors behind the current persistent weakness in price dynamics.

This weakness should not be overestimated: the core inflation rate has never been much below 1 % and is now clearly above that level. This is less than one percentage point away from the official target of the ECB of ‘below, but close to 2 %’. With such a small difference measurement issues which might appear secondary at first sight can become important.

The remainder of this note is organised as follows. The next section discusses some major contribution from the empirical literature on the causes of low inflation. Section 3 then analyses one key measurement issue, namely the omission of owner occupied housing from the official HICP. Section 4 concludes.

## 2. IS THE PHILLIPS CURVE DEAD?

### KEY FINDINGS

- Inflation has been lower than expected in many advanced countries.
- Inflation is still linked to unemployment, but the link is much less strong than in the past.
- The drop of 2 percentage points in the euro area's unemployment rate over the last years has been associated with only a modest increase in (core) inflation. Returning to the low reached in 2007 (the peak of the credit bubble) would, at this rate, still leave inflation below 2 %.

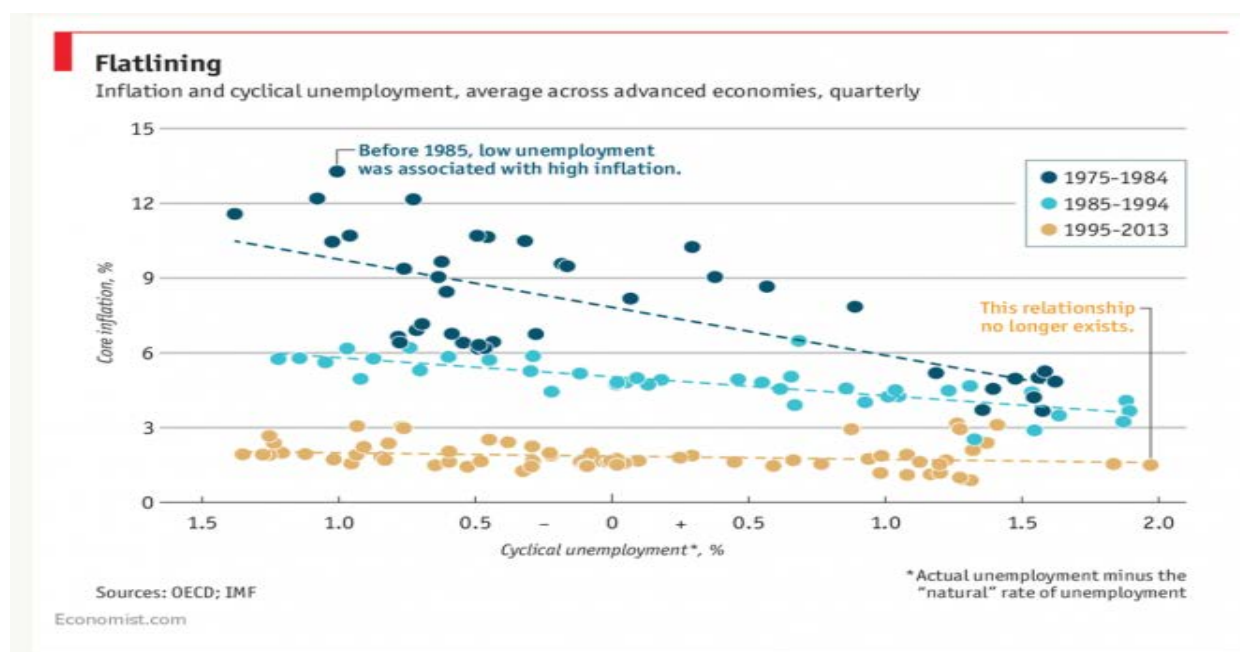
The key issue for policy makers is essentially the question whether the present subdued core inflation and wages dynamics in the euro area mainly reflect the still large degree of economic slack. In technical economic terms this amounts to question whether the 'Phillips curve' still works, i.e. whether there is a reliable link between some measure of economic slack or unemployment and inflation (both wage and price inflation).

This is an issue which has been the subject of intense research for some time now. The existing empirical literature on the stability of the Phillips curve is so large that it cannot be surveyed here. This brief section will only provide two pieces of evidence: the long term global dimension and a simple picture for the euro area.

### 2.1. Long term: the global evidence suggests a shift

Cross-country evidence spanning a long time horizon suggests clearly that the relationship between unemployment and inflation has shifted over time (Figure 1). But, as argued also by Blanchard (2016), there has been no discernible additional movement of the curve since the 1990s. Some have taken this evidence to mean that there is no longer any relationship, others perceive just a flatter line. Data from the euro area seems to confirm the latter interpretation.

**Figure 1: The inflation-unemployment trade-off has shifted over time**



Source: Merler (2017).



## 2.2. Simple evidence from the euro area

The ECB has been trying for some time to find the causes of low inflation. It even created a special task force on the topic (Task Force on Low Inflation (LIFT)). The final report of this endeavor, which involved a large network of researchers, arrived however, at less clear cut results than those cited for the US above. ECB (2017) concludes:

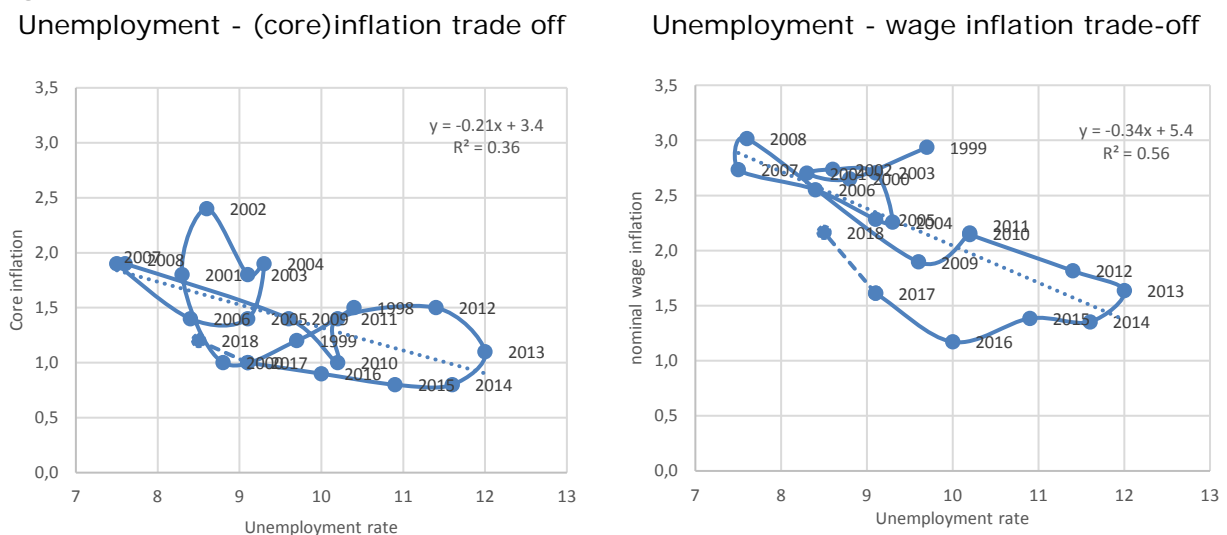
“The paper finds that the missing inflation was primarily due to cyclical factors – domestic in the earlier part of the period and global in the latter part – and that the Phillips curve remains a useful tool in understanding inflation dynamics over the period of interest.”

A simple look at the data confirms this judgment. Figure 2 below shows the trade-off between unemployment and two measure of inflation: core inflation and wage inflation.

Core inflation is implicitly one of the key variables for the ECB since this measure strips out volatile elements like oil and food. The left hand panel of figure 2 shows that the link with unemployment is rather weak, but the evolution since 2014 seems to follow the standard pattern of falling unemployment coupled with slightly increasing inflation. If this trend were to continue unemployment could fall below 7% (the previous best performance) and inflation would still remain within the ECB’s definition of price stability (below, but close to 2 %).

The right hand panel of the figure shows that the relationship between unemployment and wage increases is somewhat tighter (or rather less loose) and it seems that for any fall in the unemployment rate of 1 percentage point the increase in wages would be much stronger than for (core) inflation since the estimated coefficient is 0.34 for wage inflation, but only 0.21 for core HICP inflation.

**Figure 2: Where is the Phillips curve in the euro area?**



**Note:** Core inflation is HICP excluding energy and unprocessed food.

**Source:** Eurostat.

These estimates are of course purely illustrative. But they correspond roughly to the results in many other empirical studies which use much more sophisticated statistical techniques. Many estimates of the wage Phillips curve also contain expected inflation as an additional variable. Lower expected inflation could explain why wage increases are somewhat lower today than they used to be 10-15 years ago (for a given level of unemployment). As lower wage costs usually (but not always) tend to translate into lower prices, one could thus explain, at least partially, today’s lower inflation in terms of a Phillips curve which has shifted downwards because of lower inflation expectations.

### 3. A KEY MISSING INGREDIENT: OWNER OCCUPIED HOUSING

The HICP (Harmonized Index of Consumer Prices), which is the official measure of inflation in the euro area differs from the indices of most advanced countries in that it does not account for the cost of owner occupied housing.

The technical reason for this is that Eurostat rules determine that the HICP is based on the concept of Household final monetary consumption expenditure, abbreviated as HFMCE, which denotes actual expenditure made by households on goods or services for the direct satisfaction of individual needs or wants.<sup>2</sup> The key aspect here, which is different from many national CPIs (and especially that of the US), is that the HICP is based only on price information from monetary transactions. It thus does not include the imputed rent from owner occupied housing (OOH). Only rents actually paid enter the HICP. The reason given for the exclusion of OOH from the HICP (since 1995) was that in different countries very different approaches were used to calculate the price index of OOH.<sup>3</sup> Given the large differences in home ownership rates (which range from 40% to 90%) and mortgage arrangements, it would indeed be very difficult to construct a comparable price index for OOH.

This omission of OOH has a considerable impact on measured inflation because the cost of housing is also influenced by house prices. The different treatment of OOH can explain most of the difference between inflation in the US and in the euro area as shown by Grossman-Wirth and Monnet (2017) who look at the US price index without the housing component.

Another way to illustrate the importance of OOH is to calculate a price index for the euro area which includes OOH. This is now possible.

Recently Eurostat has started to publish an experimental series for the OOH index at the national level for all but one of the euro area countries (the Netherlands) without providing an average for the euro area. But this data is not used in the calculation of the HICP, which continues to contain only rents directly paid by households. Given that on average the home ownership rate for the euro area is over 60%, this implies that a large share of actual housing costs (the indirect ones, measured by OOH) is not reflected in the official HICP, which remains the sole target of the ECB.

It would thus be useful to check whether the inclusion of OOH in the consumer price index would yield a different picture.

We constructed first a euro area average for the OOH from the (national) data published by Eurostat (using GDP weights). Figure 3 shows that this euro area OOH component has increased more quickly than the HICP, especially over the last year. In 2017 the cost of OOH rose by about 3%, on average, twice as much as the HICP (about 1.5 % increase).

Including the cost of OOH would thus clearly have led to a higher measured inflation rate. We then constructed a hypothetical new HICP which includes OOH. For this we used the weight given to housing in the US CPI (the home ownership rates are similar in the EA and the US), which is about one third. The new HICP was then calculated using the official one and the OOH with weights two thirds and one third, respectively since these are the weights in the US CPI basket.<sup>4</sup> The result is shown in Figure 3 below, which shows the

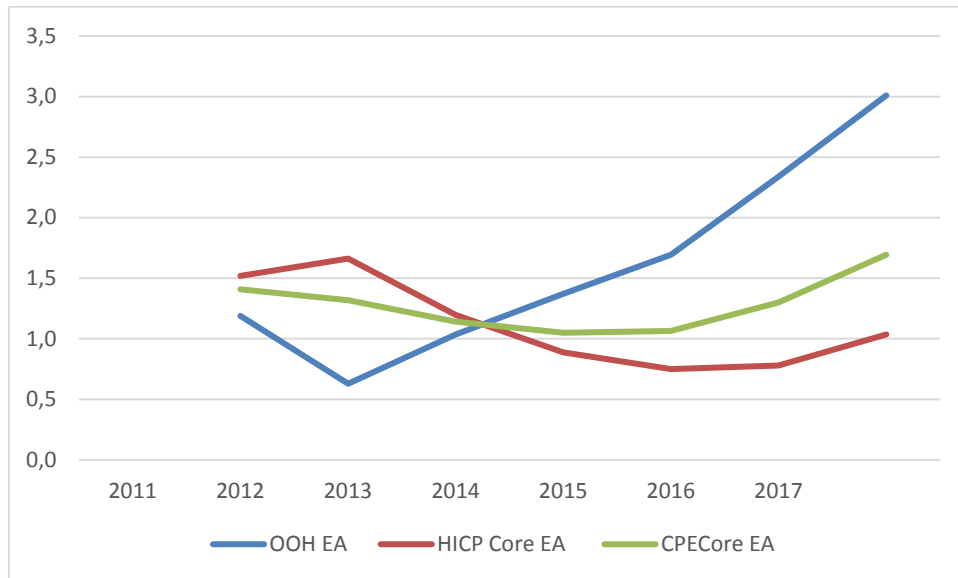
<sup>2</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Household\\_final\\_monetary\\_consumption\\_expenditure\\_\(HFMCE\)](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Household_final_monetary_consumption_expenditure_(HFMCE)).

<sup>3</sup> For a very detailed analysis see Eurostat (2012).

<sup>4</sup> ECB (2016) uses a much lower weight and thus arrives at the conclusion that the inclusion of OOH would not have a strong impact on measured inflation.

official euro area core CPI, the OOH component put together from national Eurostat data as explained above and finally the core consumer price index (denoted by CPECore) that would result from the addition of OOH.<sup>5</sup>

**Figure 3: Owner Occupied Housing in the HICP**



**Source:** Eurostat and author.

It is apparent that the ECB would be materially closer to its target of 'below, but close to 2%' if OOH were included in the HICP.<sup>6</sup> The headline HICP inflation rate, which is now running at 1.5% would of course also be correspondingly higher and would reach 2%. However, we prefer to concentrate on the core inflation rate as the recent recovery of oil prices might have increased temporarily the headline inflation figure.

<sup>5</sup> The OOH data is not available for the Netherlands. Our average should thus be considered as covering the euro area minus the Netherlands. The data starts only in 2012 because this is the first year for which Eurostat made the OOH estimates available.

<sup>6</sup> For the US, for which longer time series are available, one can observe similar differences between two prices indices which deal with housing cost somewhat differently although they both contain a component of OOH. The Federal Reserve emphasizes switched since the early 2000s from the (fixed weight) CPI to the PCE, which is based on consumption expenditure and has variable weights. CPI inflation, which contains a larger OOH component has been consistently higher than inflation based on the PCE.

## 4. CONCLUSIONS

Unemployment in the euro area has fallen below 9%, a value comparable to that of 2002-2005, but core inflation remains much lower than 15 years ago. This 'short fall' of inflation can only be explained in terms of a standard Phillips curve type relationship if one assumes that inflation expectations have fallen considerable.

But this 'short fall' could be mainly a measurement issue. The HICP, which constitutes the sole official measure of inflation in the euro area, leaves out the most dynamic element, namely the cost of owner occupied housing. If the HICP were to take into account this element the measured inflation rate would be much closer to 2%, probably close enough to satisfy the ECB's definition of price stability. Continuing with massive non-standard policy measures would then obviously no longer be justified.

The impact of rising housing costs on the HICP has become particularly pronounced more recently. This is not surprising. One of the recurring observations over the last decades has been that inflation has shown up in asset prices, rather than consumer prices. In this wider view it is not surprising that inflation measured by the HICP has remained rather insensitive to monetary policy although asset prices have greatly increased. OOH is one of the few channels by which asset price increase can have a direct impact on the inflation rates which matter for central banks.

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