

ECONOMIC COMMENTARIES

Deflation indicator for the euro area

NO. 1 | 2014

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DEFLATION INDICATOR
FOR THE EURO AREA

Euro area inflation has fallen to a low level, which has given rise to concerns about deflation. We have constructed an indicator designed to capture whether a country is in deflation. The indicator shows that the euro area as a whole and most individual countries are now farther away from deflation than during the financial crisis, with the exception of periphery countries where the indicator is approaching or exceeds the levels prevailing during the financial crisis. Greece is the only country experiencing deflation.

Deflation is usually defined as «a decrease in the general price level in an economy». A negative 12-month change in the CPI is often referred to as deflation.

The classic definition is widely considered to be deficient. In June 2013, the President of the European Central Bank (ECB), Mario Draghi, defined deflation as «a protracted fall in prices across different commodities, sectors and countries, with self-fulfilling expectations».

The ECB's definition may reflect fears of a prospective deflationary spiral, where expectations of falling prices are self-reinforcing through a downward dynamic in economic activity. A deflationary spiral is a predicament from which it is difficult to emerge, as witnessed in Japan the past two decades. Yet, negative price growth may in isolation be positive for a country with a need to improve competitiveness. We interpret the ECB's definition to mean that there must be more signs of deflation than only negative price growth before there is a well-founded risk of a deflationary spiral.

The deflation indicator

In the following, we construct an indicator that captures the ECB's definition of deflation. The deflation indicator is a composite indicator reflecting the share of price indicators that show falling prices, how long they have done so and to what extent further price declines are expected. We estimate the inflation indicator for 11 euro area countries and the euro area as a whole.

The deflation indicator is estimated on a monthly basis and comprises three sub-indicators. All three must show deflation for the composite indicator to show deflation. A composite indicator value of 1 implies deflation: The three partial indicators are:

- **Broadness:** Measures the extent to which negative price growth is broadly based. Consists of five sub-indicators. Sub-indicators 1 – 4 comprise three-month changes in consumer prices (HICP), producer prices (PPI), GDP deflator and wages.^{1,2,3} The value of sub-indicators 1 – 4 is 0 when price growth is positive and 1 when price growth is negative. Sub-indicator 5 is the percentage share of sub-components in the HICP with negative three-month growth. Sub-indicator 5 shows deflation (value = 1) if more than half of the sub-components (measured by HICP weights) show negative price growth.⁴ Otherwise, its value is between 0 and 1. The composite indicator for

¹ PPI for consumer goods excluding food.

² For the GDP deflator and wages, the monthly figure is equal to the average for the quarter.

³ Wages for the private sector up to 2008 and the whole economy thereafter.

⁴ We use the CPI with broadest coverage, i.e. 94 sub-components. The figures are seasonally adjusted in ARIMA X-12.

broadness shows deflation if more than half of the sub-indicators show deflation.

- **Persistence:** Measures the broadness of negative price growth over the past year. Expressed as the sum of the sub-indicators for broadness for the past 12 months. Shows deflation if overall inflation is negative half of the time.⁵ Otherwise the value is between 0 and 1.
- **Expectations:** Consensus Forecast inflation forecasts for the next 12 months. Weighted average of inflation forecasts for this year and next. Negative price growth implies deflation.

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The indicator for the euro area as a whole also depends on broadness across countries. If more than half of the euro area countries (measured by HICP country weights) shows a negative three-month change in the HICP, the sub-indicator shows deflation. The indicator for the euro area is based on data series for the euro area as a whole and may thus deviate from the sum of deflation indicators for individual countries. Charts 1 – 3 show data included in the indicator for the euro area as a whole.

As GDP and wage data are published with a considerable lag, we have also constructed an indicator based solely on HICP and PPI data and inflation expectations. This indicator closely follows the main indicator.

Results and comparison with HICP

According to the deflation indicator, the euro area as a whole is now farther away from deflation than during the financial crisis (see Chart 4). The risk of deflation increased through 2013 as a result of negative price growth in several HICP sub-components and euro area countries. Still, HICP inflation, the PPI, the GDP deflator and wage growth for the euro area as a whole have remained positive, as have Consensus Forecast inflation expectations one year ahead.

Moreover, most individual euro area countries are farther from deflation today than in 2008-2009 (see Chart 5), with the exception of the periphery countries. The indicator shows about the same or higher value as in 2009 for Italy, Spain, Greece, Ireland and Portugal.

According to the deflation indicator, Greece is the only country in deflation, which is consistent with the classic definition since Greece is also the only country that has experienced protracted negative annual HICP growth over the past year.

In the wake of the financial crisis, the situation was different. At that time, almost all the countries recorded negative HICP inflation. According to the classic definition, the euro area as a whole thus went through a period of deflation in autumn 2009. The deflation indicator, however, showed that Ireland was the only country in deflation.

The difference between the two definitions stems from negative inflation expectations. In the wake of the financial crisis, almost all the countries in the selection satisfied two of the three partial indicators for deflation (broadness and persistence), but only Ireland featured negative inflation expectations.

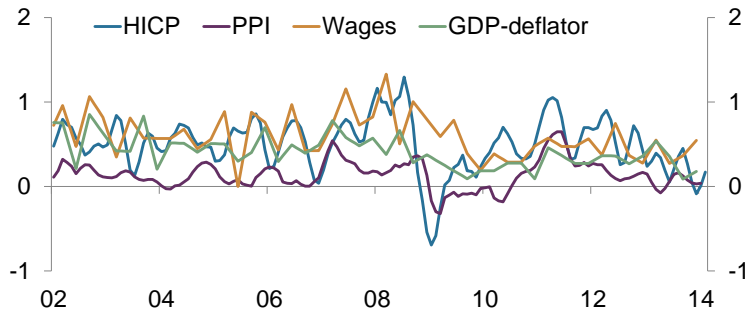
Nor did the ECB consider autumn 2009 as a period of deflation. In its communication, the ECB cited a fall in world commodity prices as the reason behind negative price growth and noted that inflation was expected to pick up further ahead⁶. As the deflation indicator captured this assessment, it seems to be a simple and good gauge of whether a country is in deflation in line with the ECB definition.

⁵ Five sub-indicators in 12 months imply a sum that is greater than 30.

⁶ See, for example, *Introductory Statement September 2009*
<http://www.ecb.europa.eu/press/pressconf/2009/html/is090903.en.html>

Chart 1: Alternative measures of underlying inflation in the euro area

Three-month change. January 2002 – February 2014¹⁾

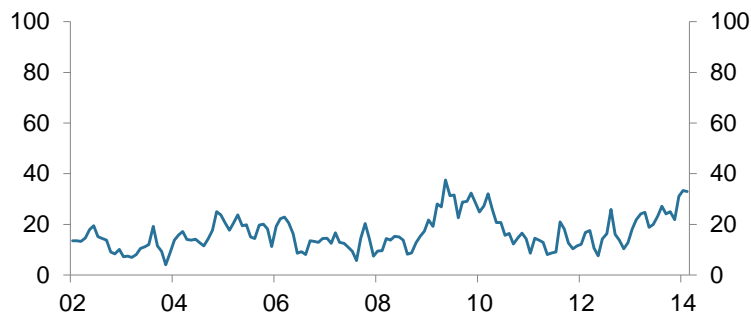


1) HICP to February, PPI to January, wages and GDP deflator to December.
Sources: Thomson Reuters and Norges Bank

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Chart 2: Share of HICP sub-components with negative price growth

HICP weights, 94 sub-components. January 2002 – February 2014

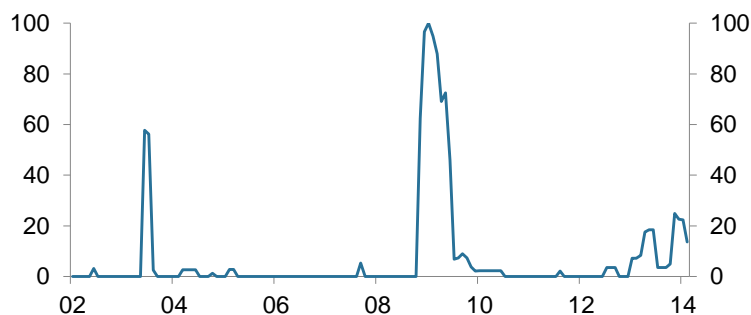


Sources: Thomson Reuters and Norges Bank

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Chart 3: Share of euro area countries with negative three-month change in HICP

HICP country weights, 11 countries. January 2002 – February 2014

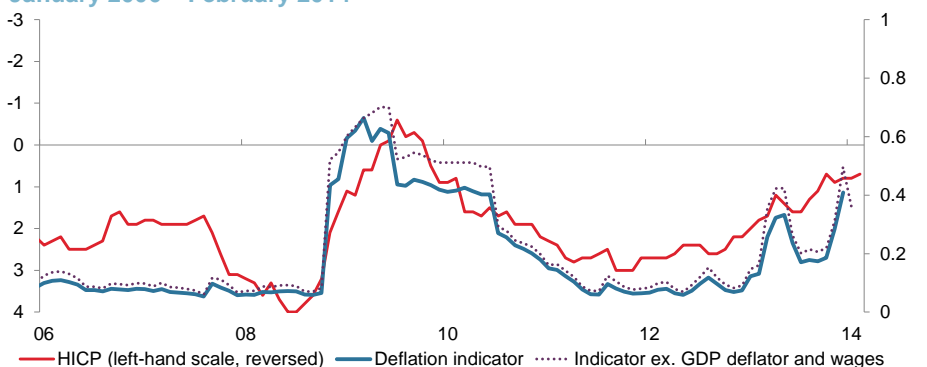


Sources: Thomson Reuters and Norges Bank

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Chart 4: Deflation indicator for the euro area

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



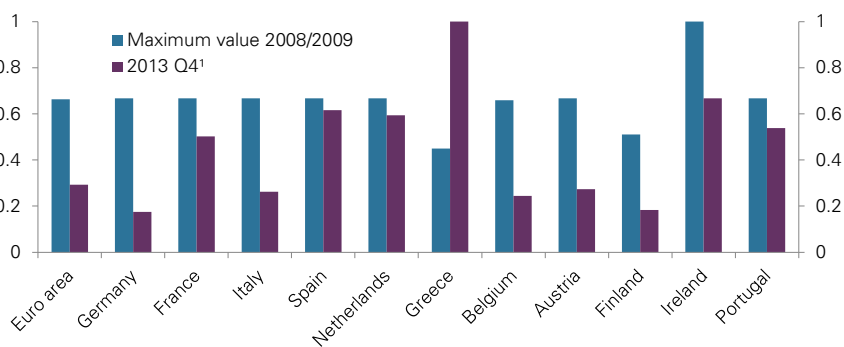
Sources: Thomson Reuters, Consensus Economics and Norges Bank

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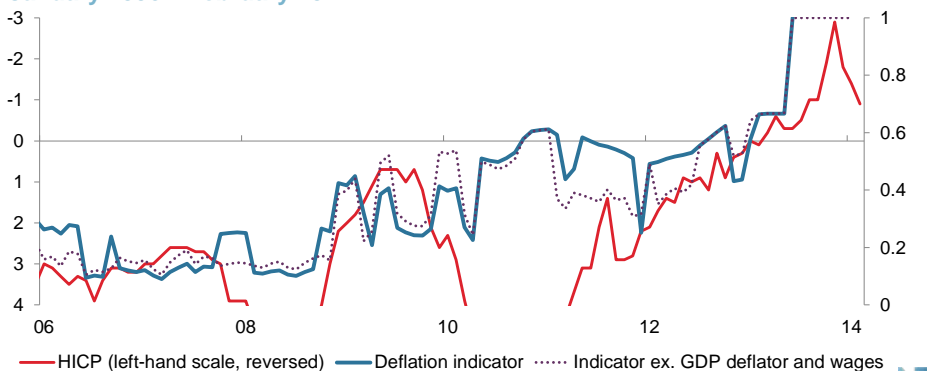
Chart 5: Deflation indicator across euro area countries



1) Indicator excluding GDP deflator and wages for Greece, Ireland and Portugal.
Sources: Thomson Reuters, Consensus Economics and Norges Bank

Chart 6: Deflation indicator for Greece

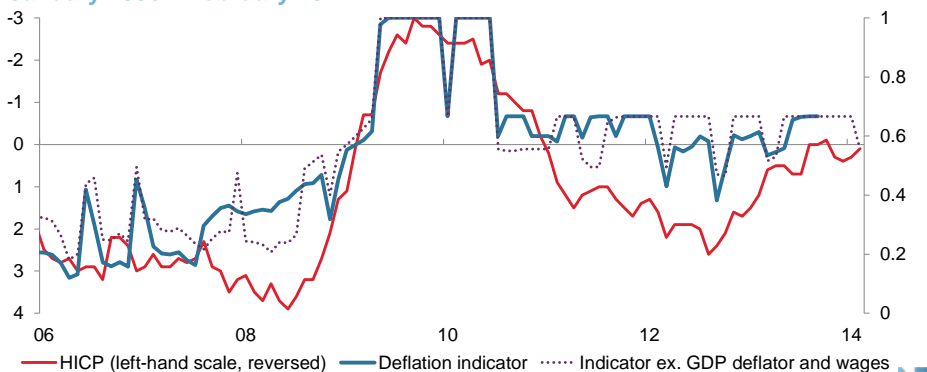
Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters and Norges Bank

Chart 7: Deflation indicator for Ireland

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

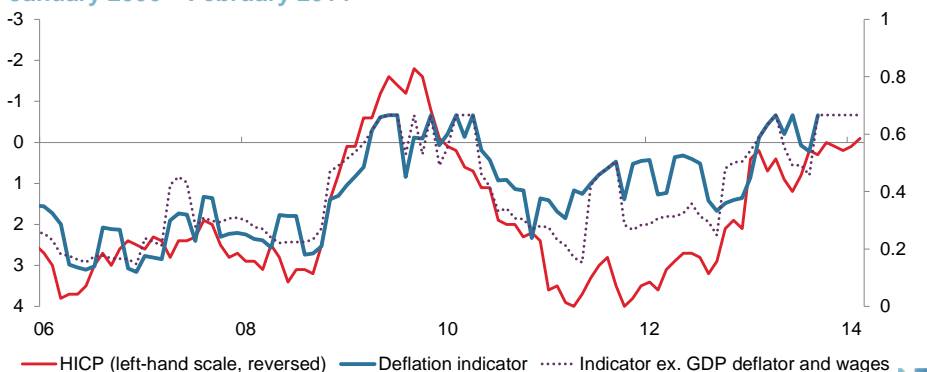
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Chart 8: Deflation indicator for Portugal

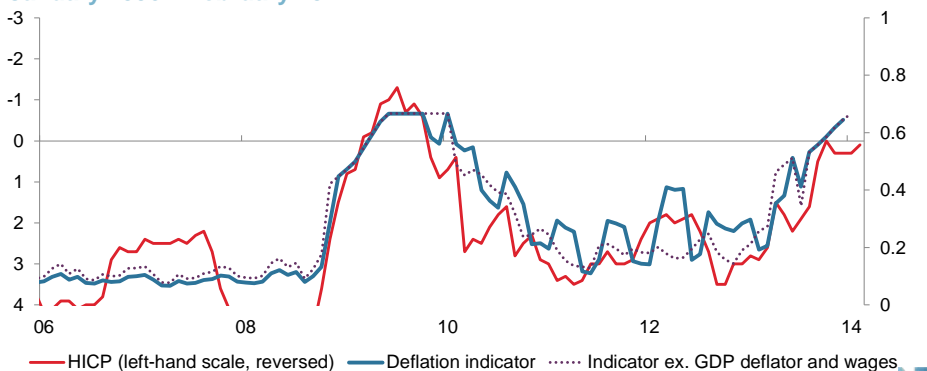
Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

Chart 9: Deflation indicator for Spain

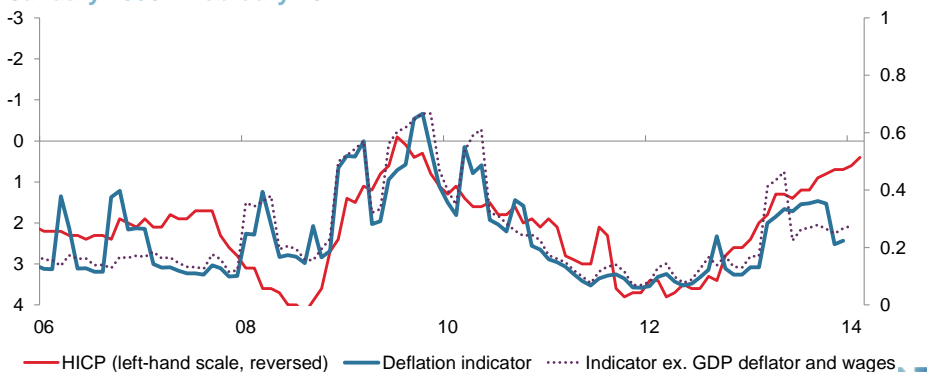
Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

Chart 10: Deflation indicator for Italy

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

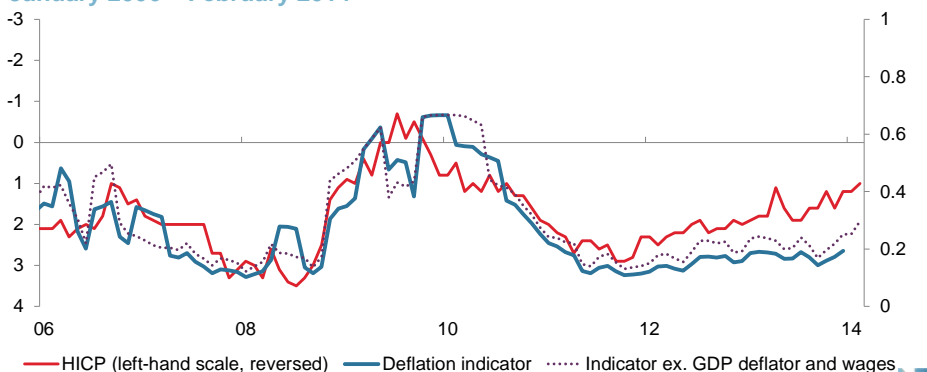
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Chart 11: Deflation indicator for Germany

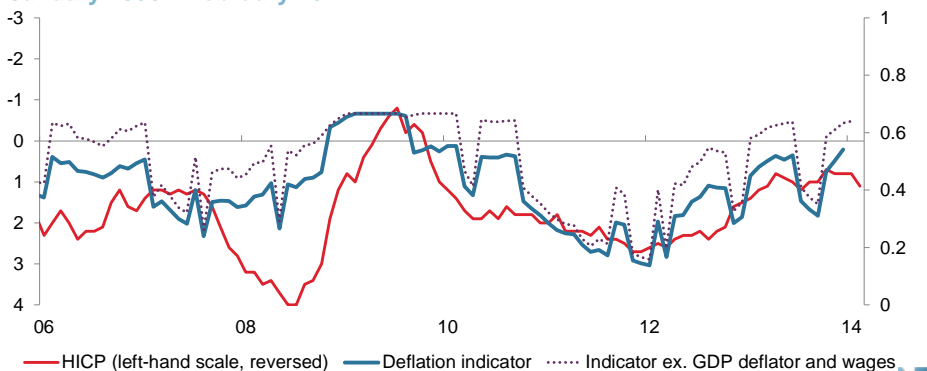
Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

Chart 12: Deflation indicator for France

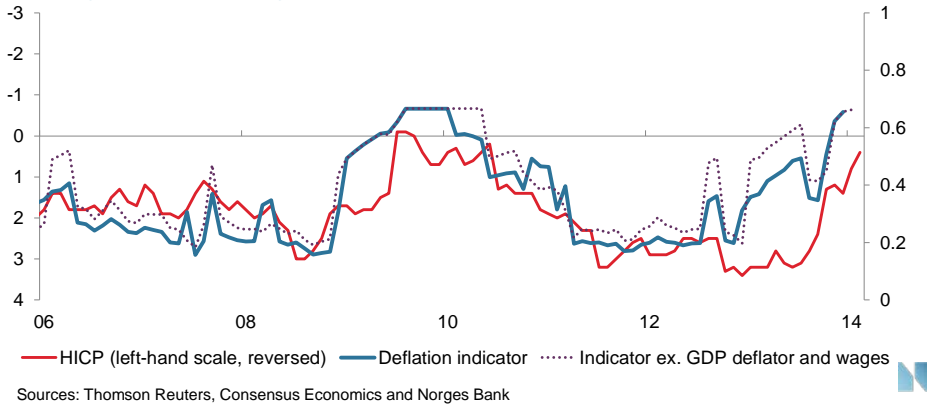
Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

Chart 13: Deflation indicator for the Netherlands

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



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Chart 14: Deflation indicator for Belgium

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014

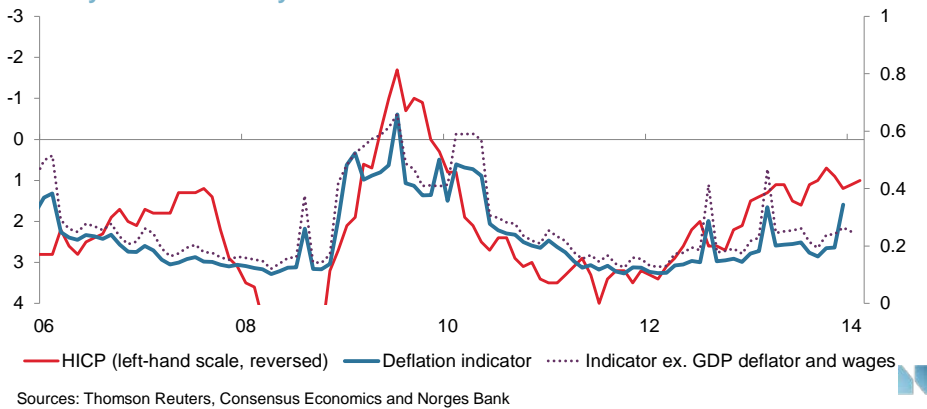


Chart 15: Deflation indicator for Austria

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014

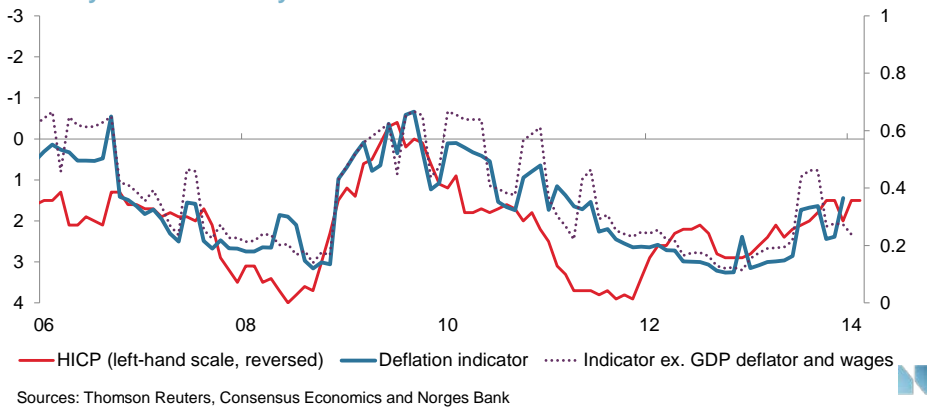
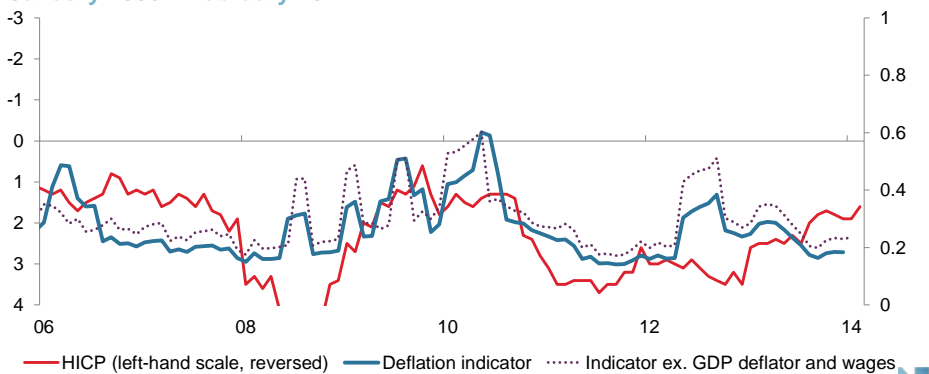


Chart 16: Deflation indicator for Finland

Deflation indicator and 12-month change in HICP.
January 2006 – February 2014



Sources: Thomson Reuters, Consensus Economics and Norges Bank

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