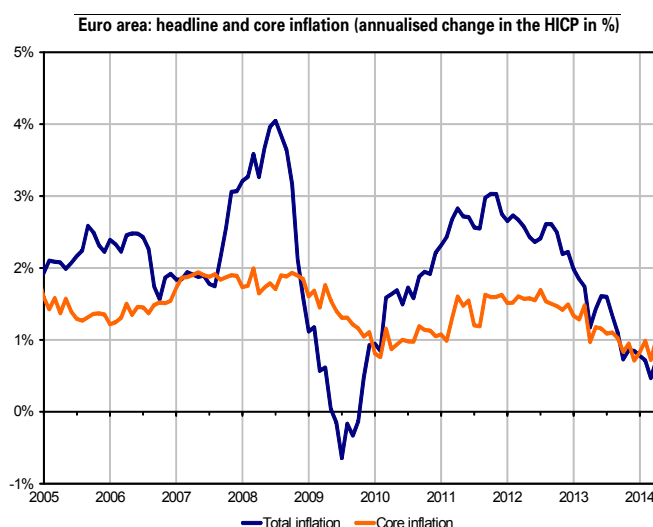


## A spell of deflation in the euro area?

- Inflation in the euro area was 0.7% year-on-year in April 2014, after reaching 0.5% in March - its lowest level since November 2009. Inflation began declining in the summer of 2012, due largely to the contraction and subsequent stabilisation of commodity prices, especially oil, as well as the appreciation of the euro. Stripping out the impact of the volatile components of the CPI, core inflation (which excludes energy and the most volatile components) has also declined since the summer of 2012, reaching 0.9% in April.
- The current low level of inflation in the euro area strengthens fears of a spell of deflation. Such a scenario would have very adverse macroeconomic effects. Deflation (defined as a sustained drop in prices affecting economic agents' expectations) is characterised by a higher cost of debt in real terms, and even a postponement of investment or consumption decisions.
- Some characteristics of the euro area tend to heighten the risk of deflation. In particular, the demand shortfall stemming from private and public deleveraging and the rebalancing through costs initiated by many countries tend to push prices down. The euro area's substantial current account surplus also contributes to the appreciation of the euro, resulting in a reduction in imported inflation and above all a negative impact on exports over time.
- The ongoing recovery should lessen disinflationary pressure without eliminating the risk of deflation because of the more distended link between inflation and the business cycle. It is apparent, in the euro area as well in the major developed countries, that inflation has been less sensitive to the cycle since the 1980s, due to central banks' focus on the goal of price stability, as well as the deepening of the globalisation process and policies aimed at eliminating the automatic indexation of wages to prices.
- All things considered, (i) providing a broadly more accommodative policy mix for the euro area and (ii) achieving rebalancing through more robust demand in countries with the greatest leeway would help reduce the risk of deflation.



Source: Eurostat, DG Trésor calculations;  
last points April 2014.

## 1. Why should we fear a risk of deflation in the euro area?

### 1.1 A period of deflation would have particularly adverse macroeconomic consequences

A situation of deflation (sustained drop in prices impacting economic agents' expectations) would have very adverse macroeconomic consequences, typically spanning the following dimensions:<sup>1</sup>

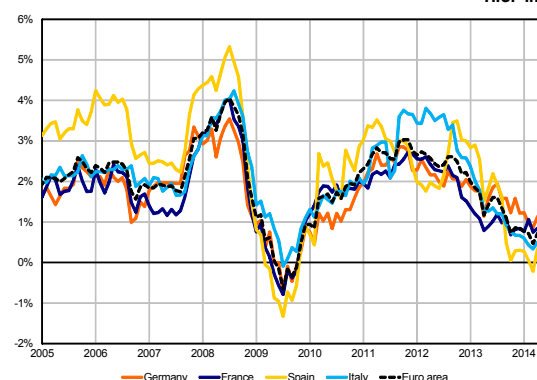
- a situation in which the expectation of lower prices prompts households and businesses to postpone purchases and investments, thereby reducing aggregate demand and profits, increasing unemployment, lowering wages and in turn prices, and so on, in a self-sustaining spiral;
- an increase in the real value of debt at the very time when economic agents need to deleverage, thereby damaging the financial situation of both households (potentially prompting them to increase their savings) and businesses (potentially resulting in lower investment);
- a situation in which monetary policy becomes harder to use (at least as regards interest rate cuts), as even zero nominal interest rates imply positive real rates (e.g. 1% with deflation of 1%).

While it is difficult to determine when lower prices may unleash a deflationary spiral, a shift by inflation into negative territory, other than for very short periods, runs the risk of triggering such mechanisms, which are hard to stop once started. It is therefore crucial to assess the possibility of a sustained period of negative inflation.

### 1.2 Inflation has fallen sharply in the euro area since the end of 2012, moving closer to negative territory

Inflation in the euro area, as measured by the annualised change in the harmonised index of consumer prices (HICP) published by Eurostat, fell by more than 2 percentage points to 0.5% between August 2012 and March 2014, the lowest reading since November 2009. It firmed slightly to 0.7% in April 2014 (see Chart 1).

Chart 1: Headline inflation in euro area countries (annualised change in the HICP in %)

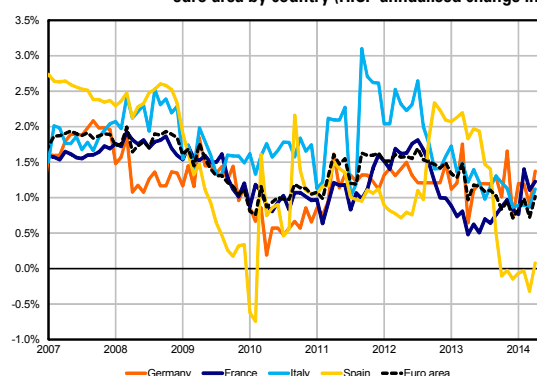


Source: Eurostat, DG Trésor calculations; last points April 2014.

The decline in inflation since late 2012 is attributable largely to lower commodity prices and the appreciation of the euro (via the contribution of energy inflation and imported inflation excluding energy, see Table 1).

However, inflation excluding energy and volatile components (food, alcohol and tobacco) is also very low (+1.0%, see Chart 2). The decline in core inflation between August 2012 and April 2014 is visible across all sectors except education, a component with a low weighting. The sectors making the biggest contribution to the decline in core inflation in the euro area are clothing (23%) and household equipment (16%).

Chart 2: Core inflation (excluding energy, food, alcohol and tobacco) in the euro area by country (HICP annualised change in %)



Source: Eurostat, DG Trésor calculations; last points April 2014.

Table 1: contributions to change in headline inflation (in %)

Period: August 2012-April 2014	Euro area	Germany	France	Italy	Spain
HICP (annualised change in %) - august 2012	2.6	2.2	2.4	3.3	2.7
HICP (annualised change in %) - august 2014	0.7	1.1	0.8	0.5	0.3
Decline in HICP inflation	-1.9	-1.1	-1.5	-2.8	-2.4
Contribution of energy	-1.1	-1.1	-0.7	-1.5	-1.2
Contribution of food	-0.4	-0.2	-0.5	-0.6	-0.6
Contribution of core components	-0.4	0.1	-0.3	-0.6	-0.6

Source: Eurostat, DG Trésor calculations.

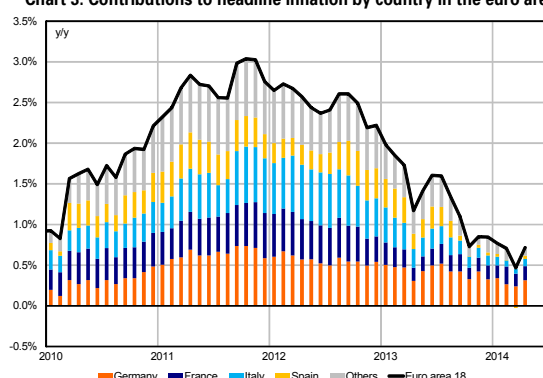
(1) See Banque de France (2009), "Déflation ou désinflation ?", *Focus* No. 3, January.

The effects of past tax or administered price increases have temporarily contained inflation in some countries, particularly Spain,<sup>2</sup> but these effects have now ceased and do not explain the particularly low level of inflation, including in Spain. Indeed, in the first half of 2012 - before increases in administered prices and VAT - core inflation was already relatively low in that country (+0.7% in April 2012). In addition, inflation at constant tax rates<sup>3</sup> in Spain was substantially lower than headline inflation throughout 2013.

### 1.3 However, both the extent of disinflation and its spread to different sectors of the economy has been uneven from one country to another

As regards contributions by the major euro area countries, trends in Spanish and Italian inflation are responsible for nearly half of the slowdown in inflation observed in the euro area between August 2012 and April 2014, with Germany and France contributing only a third (see Chart 3). The result is the same when we look at core inflation.

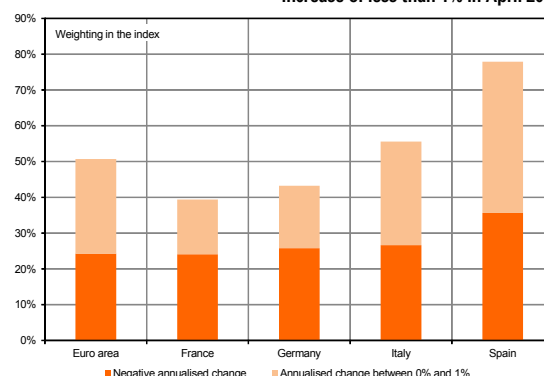
Chart 3: Contributions to headline inflation by country in the euro area



Source: Eurostat, DG Trésor calculations; last points April 2014.

The proportion of components with an annualised increase of less than 1% was significantly higher in Spain (78%, as opposed to 39% in France, 43% in Germany and 56% in Italy in April, see Chart 4), confirming that disinflation is currently most pronounced in Spain.

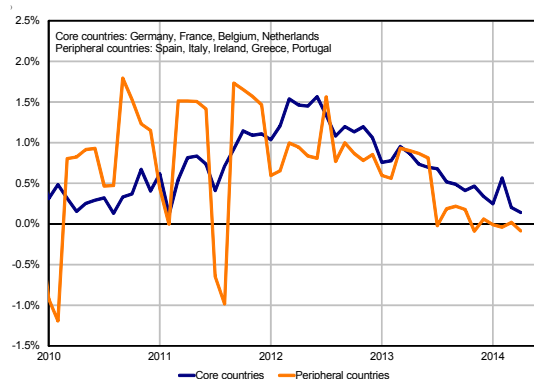
Chart 4: Share of HICP components in deflation or with an annualised increase of less than 1% in April 2014



Source: Eurostat, DG Trésor calculations.

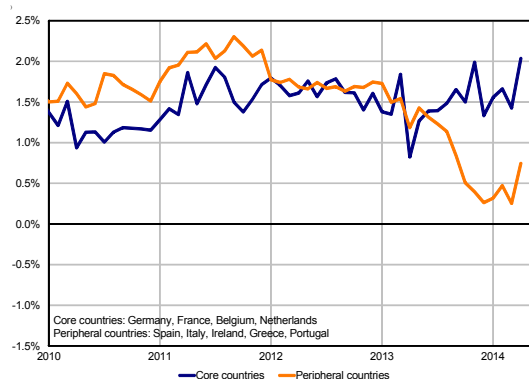
While low inflation for industrial goods (excluding energy) can be observed across the entire euro area (see Chart 5), and could be explained by the contribution of imported disinflation, there is a real divergence between countries as regards services (see Chart 6). In this sector, more exposed to domestic wage growth, inflation is at an all-time low in the peripheral countries, but has remained relatively stable in the core countries of the monetary union. The very low level of inflation in services in the peripheral countries suggests that the deterioration in the volume of economic activity is starting to have a substantial impact on prices, an effect that may well persist.

Chart 5: Change in prices of industrial goods excluding energy (annualised change in the HICP)



Source: Eurostat, DG Trésor calculations; last points April 2014.

Chart 6: Change in prices of services (annualised change in the HICP)



Source: Eurostat, DG Trésor calculations; last points April 2014.

- (2) The low level of inflation currently prevailing in Spain is attributable partly to the impact of strongly negative comparison bases between July and October 2013 in the aftermath of the VAT increase on 1 September 2012 and change in administered prices (university fees).
- (3) This series shows the theoretical impact of changes in indirect taxes (VAT and excise duties) on headline inflation. This impact is theoretical, and actually represents the upper bound of the effect of change in tax rates, because it assumes that the transmission of change in indirect taxes to consumer prices is full and immediate. In practice, however, the transmission is slow and partial, because companies absorb part of it in their margins in the short or even long term (see Jégou, N., Testas, A. (2013), " Pourquoi, dans la zone euro, l'inflation n'est-elle pas plus faible que dans les pays affectés par la crise ? ", *Note de conjoncture*, Insee, March, pp. 47-63.

## 1.4 Looking beyond recent price trends, numerous indicators confirm disinflationary pressures in the euro area, particularly pronounced in Spain

To measure the risk of deflation, we have constructed a synthetic vulnerability index based on that developed by the IMF (Rogoff, 2003<sup>4</sup>). To Rogoff's 11 indicators reflecting the most recent trends in (i) prices, (ii) the business cycle, (iii) bank credit, (iv) money supply and (v) asset markets, we have added property prices, oil prices, prices of imported industrial products, unit labour costs (ULC) and the inflation expectations of the financial markets, which are also pertinent factors for analysing the recent crisis in the euro area. The overall

index is the proportion of indicators pointing to a significant risk of deflation, measured as the breach of a critical threshold determined in a normative manner.<sup>5</sup>

**In April, in the euro area as a whole, half of the components of our indicator signalled a high risk of deflation, with external aspects playing a critical role** (see above) due to the appreciation of the euro and lower import prices. Cyclical elements (wider output gap, wage moderation) and the contraction of credit also reinforced the disinflationary trend.

Table 2: Synthetic vulnerability indicators

Determinant of inflation	Is price moderation widespread?						Do external factors have an adverse impact?			Does the cycle have an adverse impact?				Will there be a credit crunch?		Are inflation expectations falling?	Synthetic indicator	
Indicator	HICP	Core HICP	Spread of falling prices	GDP deflator	Stock market	Property prices	Oil	REER	Imported PPI	Level of OG	Change in OG	ULC	Recent growth	Change in private credit	Change in private credit < nominal GDP growth	2-year swaps	April 2014	2013 (annualised average)
France	Yellow	Green	Green	Yellow	Green	Green	Green	Yellow	Red	Red	Yellow	Green	Red	Red	Red	Yellow	Green	Green
Spain	Red	Red	Yellow	Red	Green	Red	Green	Green	Red	Red	Green	Green	Red	Red	Red	Red	Red	Yellow
Italy	Yellow	Green	Green	Yellow	Green	Yellow	Green	Green	Red	Red	Yellow	Green	Red	Red	Red	Red	Yellow	Green
Germany	Green	Green	Green	Green	Green	Green	Green	Red	Red	Red	Green	Green	Red	Red	Red	Green	Green	Green
Euro area	Yellow	Green	Green	Green	Green	Grey	Green	Red	Red	Red	Green	Green	Red	Red	Red	Yellow	Green	Green

Sources: Eurostat, Ameco, Reuters, ECB, IHS Global Insight, national, DG Trésor calculations.

Legend: red square: indicator located in a high risk area in view of the thresholds defined below; yellow square: indicator located in a median risk area; green square: indicator located in a low risk area; grey square: no data.

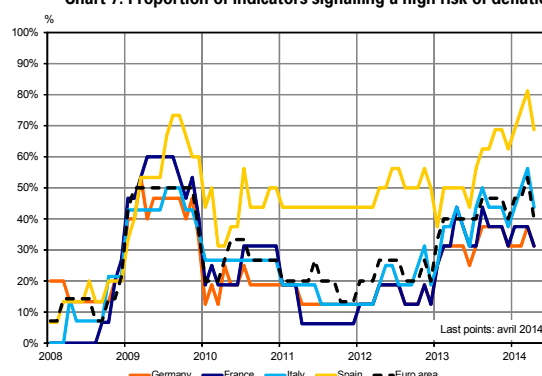
Definition of the thresholds: **HICP, core HICP and GDP deflator**: high risk if annualised change < 0.5%, median risk if 0.5% < annualised change < 1%. **Spread of falling prices**: high risk if prices down on more than 40% of HICP basket, median risk if prices down on between 30% and 40% of index. **Stock market**: high risk if decline of 30% or more in past three years, median risk if decline less than 30%. **Property prices**: high risk if drop of 10% or more in past three years, median risk if drop less than 10%. **Oil**: high risk if annualised change < 0%. **REER**: high risk if appreciation of more than 4% over past year, median risk if appreciation of between 3% and 4%. **Prices of imported industrial products**: high risk if annualised change < 0%. **Output gap (level)**: high risk if OG has widened by more than 2 percentage points. **Output gap (variation)**: high risk if OG has widened by more than 2 percentage points over past year. **ULC**: high risk if annualised change < 1%, median risk if 1% < annualised change < 1.5%. **Recent growth**: high risk if annualised growth in past two years has been lower than average growth over previous decade. **Private credit**: high risk if outstanding loans have declined over past three years, median risk if growth less than 10%. **Private credit and nominal GDP**: high risk if private credit has grown more slowly than nominal GDP in current quarter than over previous four quarters. **Inflation expectations**: high risk if expectations below 0.5%, median risk if between 0.5% and 1%. The **synthetic indicator** implies high risk if more than 60% of the indicators are in the in high risk area, median risk if between 40% and 60% of indicators are in the high risk area. ULC data are drawn from harmonised data and therefore exclude the competitiveness and employment tax credit (CICE) for France.

**The overall trend masks disparities among the major economies of the monetary union.** On the one hand, the risk appears particularly high in Spain (11 indicators signalling a risk of deflation, close to the maximum observed since the beginning of the crisis in 2008), whereas there appears to be less implied risk in Germany, where virtually all the indicators with readings in the high risk area are external. France and Italy are in an intermediate situation, in which the current weakness of inflation can be attributed above all to international trends, but in which a low level of economic activity could also be having an impact on price moderation. If one focuses solely on indicators signalling a high risk of deflation (see Chart 7), the increase observed since the beginning of 2013 is particularly pronounced in Spain, and to a lesser extent in Italy.

**Thus, the risk of deflation cannot be ruled out in the euro area as a whole, and is particularly high in some countries such as Spain. The materialisation of this risk**

**will depend on change in the various dimensions identified above.**

Chart 7: Proportion of indicators signalling a high risk of deflation



Source: Eurostat, DG Trésor calculations; last points April 2014.

- (4) Rogoff, K., (2003), "Deflation: Determinants, Risks, and Policy Options - Findings of an Interdepartmental Task Force", IMF.
- (5) For instance, when annualised change in the HICP is below 0.5%, the vulnerability score increases. Similarly, the score increases when the output gap is greater than 2 points.

## 2. The specific situation of the euro area increases the risk of deflation, especially for some member countries

### 2.1 In the euro area, macroeconomic adjustments and economic policies adopted to address the crisis have dampened inflation

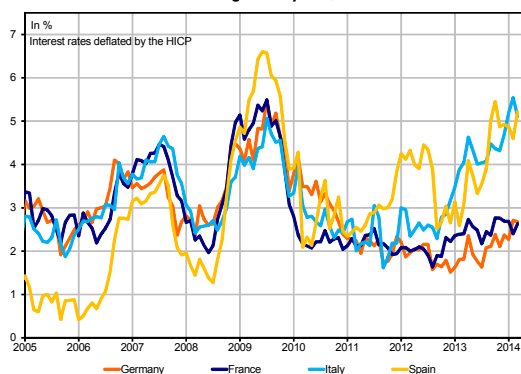
The global financial crisis that began in 2008 has had particular consequences in terms of macroeconomic and economic policy adjustments in the euro area (especially since 2010), due to the specific characteristics of the monetary union. Overall, these elements help or have helped contain inflation, both on the cost side and through the impact of private and public deleveraging on economic activity:

- **Adjustment of wages and costs in the euro area:** the crisis abruptly forced many "peripheral" euro area countries (notably Spain) to adopt policies needed to improve their current account, with the ultimate aim of significantly reducing their external debt. This adjustment primarily involved the containment of domestic demand (very strong in the pre-crisis period in countries such as Spain, where it took root in a housing bubble and debt, see Box 1). Moreover, the depressed state of labour markets and the implementation of reforms resulted in lower costs. The adjustment of wages in turn had a downward impact on inflation in the countries concerned, notably *via* an effect on domestic demand. This effect was compounded across the euro area as a whole by the fact that the adjustment was carried out in a large number of countries with close trade ties.
- **Strengthening of fiscal consolidation following the tension on sovereign debt, particularly in the most vulnerable countries:** the sovereign debt crisis that began in 2010 caused increased financial stress and prompted an acceleration of fiscal consolidation in the euro area, especially in peripheral countries. **While this process weighed heavily on domestic demand and as such on economic activity, its impact in terms of inflation was more ambiguous.** In some countries, such as Greece, Spain and Portugal, a significant measure of fiscal consolidation was achieved through increases in indirect taxes. For instance, while headline inflation in Spain was close to that of the euro area, the HICP at constant tax rates implies significantly weaker prices throughout the period since 2008. Administered prices were also particularly robust in the countries that underwent significant fiscal consolidation. **The upward impact of higher taxes thus automatically fuelled inflation in the short term; all things considered,**

however, the tightening of the already restrictive fiscal policy during a fragile recovery dampened economic activity and in turn inflation (although the link was weaker than in the past, see section 3), with strong intra-area disparities.

- **Ongoing deleveraging and weakness of credit:** while the ongoing deleveraging process is not specific to the euro area, it has been slower than in other major economic areas (partly because of the area's slow growth). The resurgence of financial tension in the euro area between 2010 and 2012 in the wake of the sovereign debt crisis also led to a sharp deterioration in financial conditions (after that of 2008), notably *via* an increase in interest rates on loans (see Chart 8) and more generally a tightening of lending conditions.
- **Effects of the rebalancing on the exchange rate:** the asymmetrical rebalancing of current accounts in the euro area sustainably increased the current account surplus of the euro area with the rest of the world. Peripheral countries reduced their current account deficits with their European partners and the rest of the world, while countries with trade surpluses, such as Germany, maintained or increased their surpluses by improving their position in respect of the rest of the world. **The sharp rise in the euro area's current account surplus has tended to push up the value of the euro,** implying a decline in short-term inflation (*via* lower import prices, notably on raw materials), and above all a negative effect on economic activity (exports).

Chart 8: Real interest rates on new loans to non-financial corporations, maturing in 1-5 years, loans of less than €1 million



Source: Eurostat, BCE, DG Trésor calculations; last points March 2014.



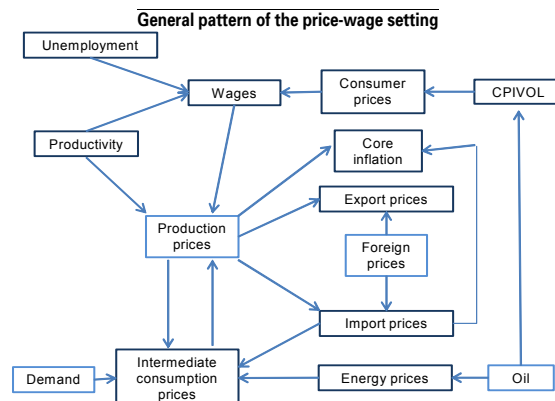
### Box 1: Divergent levels of inflation and wage-price setting

Since the 1980s, the inflation rates of member countries in the area have converged at significantly lower levels. **However, a measure of divergence has remained in the inflation rates of Member States.**

**Inflation differentials observed in the euro area pre-crisis were persistent, implying that national determinants had retained some importance in the variation of prices.** Inflation was consistently higher in some countries, such as Greece, Spain and Portugal, than in the euro area as a whole, and consistently lower in other countries, such as Germany, as well as Finland and Austria (see Chart 9). This trend stemmed in large part from the different growth models existing in the euro area during the pre-crisis period, with, schematically, considerable wage moderation in Germany, and property and debt bubbles buoying wages and prices in southern countries.<sup>a</sup>

Some disparity in inflation readings may be considered "normal" within a monetary union, especially if they result from a trend towards the convergence of price levels - especially for tradable goods - and the closing of productivity gaps. But other factors related to an economy's structure may exacerbate differences, whether they be national institutions (notably the labour market<sup>b</sup>) or more broadly the different growth models adopted (see above).

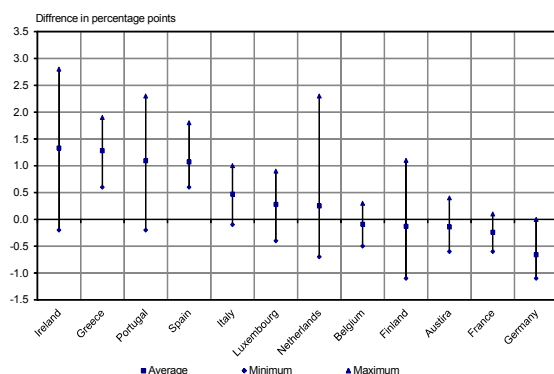
Inflation differentials observed before the crisis are highly correlated with changes in nominal wages (see Chart 10), as implied by the price-wage setting. Change in the average wage per employee can be attributed in part to that of the consumer price index (whether or not formal indexation is in place), whereas production costs (which account for the lion's share of core inflation) are also hinged on wage trends.<sup>c</sup>



Source: 2010 Opale model, DG Trésor.

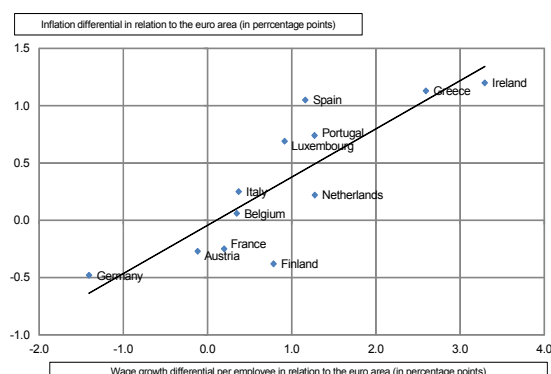
Inflation differentials in the euro area, broadly in line with wage trends, thus remained significant before the crisis, notably because of the strong price momentum in countries that had significant imbalances (private debt in Ireland and Spain, public debt in Greece). Note the particular situation of Germany, which is the only euro area country to see compensation per employee increase at a significantly slower pace than the average for the euro area between 1999 and 2008.

**Chart 9: Gap in relation to core inflation across the euro area (1999-2008)**



Source: Eurostat.

**Chart 10: Inflation and nominal wage growth (1999-2008)**



Source: Eurostat.

With the convergence of nominal interest rates when the euro was adopted, differences in real interest rates between countries have stemmed from inflation differentials. These differentials have been weakest in high inflation countries (Ireland, Spain, Portugal, Greece), thereby having a pro-cyclical impact that can compound the increase in inflation.

- a. The effect on prices in certain sectors, such as construction, can affect prices across the board, thereby boosting headline inflation; support for demand stemming from the boom is also a factor driving inflation.
- b. Importantly, the degree of centralisation of wage bargaining and employment protection explains a significant part of the inflation differential before the crisis. Jaumotte and Morsy (2012), "Determinants of inflation in the Euro Area: the role of labor and product market institutions", *IMF Working Paper*, WP/12/37, estimate for instance that more than half of the inflation gap with the euro area average observed in Greece, Portugal and Spain between 1999 and 2010 can be attributed to labour market institutions.
- c. See Bardaji, J., Loubens, A. et Partouche, H., (2010) « La maquette de prévision Opale 2010 », *Document de travail de la DG Trésor*.

**2.2 These adjustments are expected to continue in the coming years, resulting in disinflationary pressure**

**Private sector deleveraging is still necessary in some countries, particularly Spain. This suggests that the adjustment will continue in the coming years.** Thus, private sector players will remain constrained in a context where bank credit is also expected to remain limited, in the short term at least. On the one hand, bank balance sheets are penalised by a high level of bad debts, particularly in Spain and

Italy, while on the other hand, banks are expected to maintain their prudent behaviour in the lead-up to the publication of the assessment of bank balance sheets by the European Central Bank (ECB) in 2014. Deleveraging is therefore expected to continue weighing on growth, albeit with a diminishing impact.

Moreover, the labour market is generally still in a very poor state, which is why prevailing wage moderation is expected to continue. In addition, structural labour market reforms implemented since the crisis should also contribute to wage moderation, in a context of a moderate recovery. By

contrast, in Germany, the healthier economic outlook in a context of low unemployment should result in stronger wage growth (further supported by the phasing-in of a minimum

wage), which should have a positive impact on consumer prices.

### 3. The recovery underway is expected to ease disinflationary pressures. However, due to the lesser sensitivity of inflation to the domestic business cycle, inflation is set to remain sustainably low in the euro area

#### 3.1 In theory, the anticipated recovery should lead to the gradual resurgence of inflation

**In theory, the domestic business cycle plays a pre-eminent role in inflation trends.** Its effect comes either directly *via* the impact of excess (insufficient) demand on price setting (depending on the degree of competition in the market in question), or - and chiefly - through the role of the labour market in setting prices through wages (see Box 1). In cycle troughs, a depressed labour market tends to (i) reduce the bargaining power of employees, limiting wage growth, and (ii) mechanically lower household income and aggregate demand in the economy. Thus, whether through simple equations such as the Phillips curve (most often involving the output gap or the gap between the structural unemployment rate and inflation),<sup>6</sup> or models bringing unemployment into the price equation *via* the prior modelling of wages,<sup>7</sup> the business cycle is pivotal in classic representations of inflation.

Within this analysis framework, the recovery that began in the spring should eventually buoy inflation in the euro area. Inflation should however remain moderate, and may continue to decline in the short term because the unemployment rate is still particularly high and only just starting to stabilise,<sup>8</sup> and the output gap, despite the considerable uncertainty as regards its measurement, remains wide.

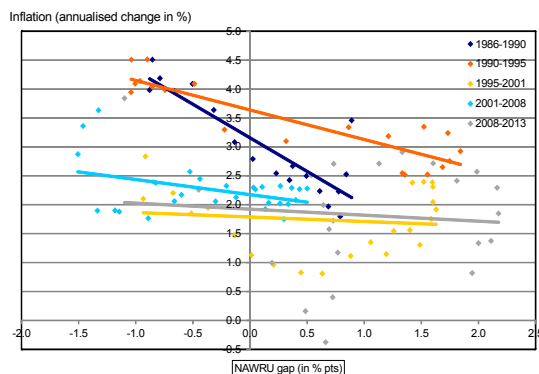
#### 3.2 But it seems that inflation is now less sensitive to the business cycle, implying a sustained period of low inflation

**Inflation appears to have been significantly less sensitive to the business cycle in recent years, contributing to its greater stability** (lower variance, but also indications of stronger mean reversion, especially since the mid-1980s<sup>9</sup>), as underscored by the IMF.<sup>10</sup> The decline in inflation, which can actually be traced back to the 1980s (see Box 2), is partly the result of more firmly anchored expectations and the weakening of its link with the domestic business cycle.

This trend tends to put into perspective the risk of deflation in developed countries, particularly in the euro area, but increases that of a sustained period of low inflation. **The**

upward effect on prices of the increased economic activity anticipated in the euro area in the period to 2015 should be less pronounced ("flattening of the Phillips curve", see Chart 11).

**Chart 11: Euro area: relationship between core inflation and the NAWRU gap (quarterly data)**



Source: ECB, European Commission; DG Trésor calculations. NAWRU gap: gap between actual unemployment and the NAWRU (non-accelerating wage rate of unemployment).

#### 3.3 A scenario of sustainably low inflation accompanied by certain mechanisms at work in a deflationary spiral cannot be ruled out

Very low or negative inflation over a sustained period would provide an additional barrier to the deleveraging of economic agents (in real terms). The more sustained recovery and stronger wages seen in Germany suggest a more positive contribution to inflation in the euro area, but it is not clear that these changes are sufficient to counteract deflationary pressures in the southern countries of the euro area. All things considered, while the gradual and uneven recovery (facilitated by a generally more favourable policy mix) can be expected to help buoy inflation moderately across the euro area as a whole, continued wage moderation and the need for deleveraging by private sector economic agents will continue to dampen trends in peripheral countries (see Table 3).

(6) See for instance, IMF (2013), "The dog that didn't bark: Has inflation been muzzled or was it just sleeping?", *IMF World Economic Outlook*, Chapter 3, April.

(7) In Opale 2010, for instance, ULCs (wages relative to GDP in volume) are included in producer prices, which are in turn factored into the modelling of consumer prices.

(8) In March, according to Eurostat, the unemployment rate in the euro area (ILO definition) was stable at 11.8% of the labour force.

(9) See Borio, English and Firlardo (2003), "A tale of two perspectives: old or new challenges for monetary policy?", *BIS Papers* No. 19.

(10) IMF (2013), *op. cit.*

## Box 2: The reasons for the decline in inflation since the early 1970s

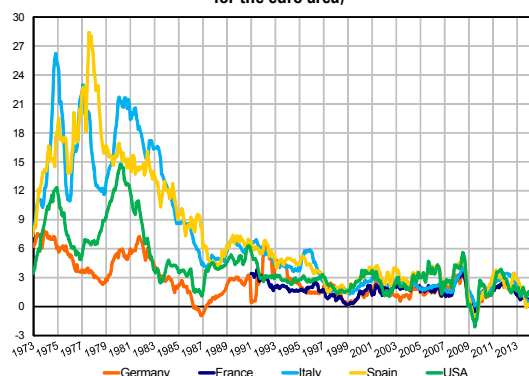
The 1980s were characterised by strong disinflation in the United States and the major developed countries, including the countries of today's euro area. A more moderate disinflationary trend continued during the 1990s and early 2000s. Since then, inflation has stabilised at a historically low level, often near or below 2% (see Chart 12).

The factors most often cited (see Borio and White (2004)<sup>a</sup>) to explain the lowering of the inflation rate are:

- **The determination of central banks, especially since the days of Paul Volcker in the United States, to uphold and focus their action on price stability,** a credible policy of price stability providing a stronger anchor for inflation expectations and ultimately the stabilisation of inflation.
- The acceleration of globalisation, although the importance of this factor in the overall downward trend is debatable.<sup>b</sup> It is said to have had a deflationary impact through:
  - (i) **the import prices channel:**<sup>c</sup> the arrival of low-cost producers on the global market allowed developed countries to benefit from imports at lower prices. This effect on prices is deemed permanent, but, in the absence of a further increase in the share of imports from low-cost countries, its effect on inflation would be temporary.
  - (ii) **other indirect channels:** for instance, imports of foreign goods tend to increase competition in the goods market, reducing firms' market power.
  - (iii) **increasing trade openness** is also said to have reduced the sensitivity of inflation to domestic factors. Indeed, an increase in domestic demand (or a negative supply shock) would ease the pressure on domestic production capacity, since external supply can offset a supply deficit through imports.<sup>d</sup>

- **Reforms of the labour market, and more specifically "wage disindexation" policies.** France, for instance, entered a lasting period of wage moderation in the early 1980s. In 1982, to break the inflationary spiral triggered in part by an ex-post indexation of wages to prices and permanently install a regime of low inflation, the French government initiated a policy known as "wage disindexation", which initially took the form of a wage and price freeze running from 1 June to 1 November 1982. Subsequently, the government encouraged the social partners to take as a reference the inflation target set in the annual budget rather than past inflation, in order to change the expectations of the various economic agents as regards future inflation.<sup>e</sup> In 2010, Spain also embarked on the path of wage moderation. A key objective of the 2012 reform of the Spanish labour market was the disindexation of wages to prices.

Chart 12: Headline inflation (annual change in the CPI in %, HICP for the euro area)



Source: IHS Global Insight, DG Trésor calculations.

- Borio, C. and White, R. (2004), *Whither Monetary and Financial Stability? The implications of evolving policy regimes*, BIS Working Papers No. 147, February.
- See for example in one corner, IMF (2013), "The Great Recession and the Inflation Puzzle", *IMF Working paper*, and in the other corner Borio and Filardo (2007), "Globalisation and inflation: New cross-country evidence on the global determinants of domestic inflation", *BIS Working Papers*, No. 227.
- See for instance IMF (2013) *op. cit.*
- See Borio and Filardo (2007), *op. cit.*
- See Desplatz and al. (2003), « La modération salariale en France depuis le début des années 1980 », *Économie et statistique* No. 367.

Table 3: Inflation outlook

Determinants of inflation	Effects on inflation since mid-2013	Effects anticipated in the coming months
<b>External factors</b>		
Commodity prices	↘	
<b>Cyclical factors</b> (e.g. output gap)	↘	↗
<b>Effect of economic agents' expectations</b> (economic climate surveys, swaps)	→	→ down slightly recently, but still at a level close to the ECB's target
<b>Policy mix</b>		
- fiscal consolidation	↘ (negative comparison base resulting from past increases in indirect taxes)	→ (less fiscal consolidation, generally more focused on spending)
- monetary policy	→ (low impact of interest rate cuts)	? (fresh interest rate cuts, new measures?)
<b>Effect of intra-area adjustments</b>		
- deleveraging of private sector economic agents	↘ (peripheral countries)	↘ (peripheral countries)
- rebalancing of demand through labour costs	↘ (peripheral countries)	↘ (peripheral countries) ↗ (particularly Germany)
- rebalancing of the aggregate current account balance	↘ (via the effect of the appreciation of the exchange rate, which reduces imported inflation and affects the activity of exporters)	? (future exchange rate trends depend on the form of rebalancing and the monetary policy response)

Source: DG Trésor.



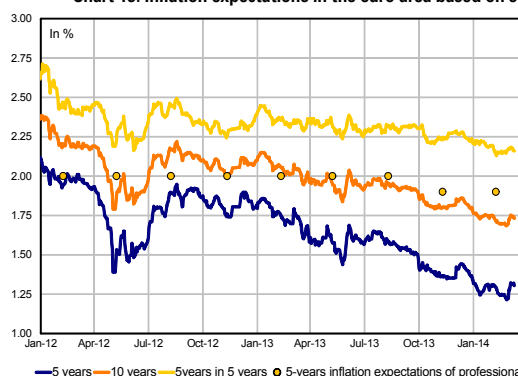
#### 4. Faced with a moderate risk of deflation but a high probability of sustained low inflation, the policy mix plays a key role

##### 4.1 Medium- to long-term inflation expectations are firmly anchored, but do not preclude the appearance of the risk of deflation

Despite a slight decline in the recent period, **medium- to long-term market inflation expectations derived from inflation swaps (see Chart 13), as well as those derived from economic climate surveys, are close to the ECB's medium-term target** ("below, but close to 2%"). Expectations derived from economic climate surveys point to a gradual return of inflation to the medium-term objective (inflation of 1.7% in 2016 and 1.9% in 2018).

**However, the Japanese experience argues for caution (see Box 3):** it shows that positive long-term inflation expectations are not sufficient to ensure that the risk of deflation will not materialise.

Chart 13: Inflation expectations in the euro area based on swaps



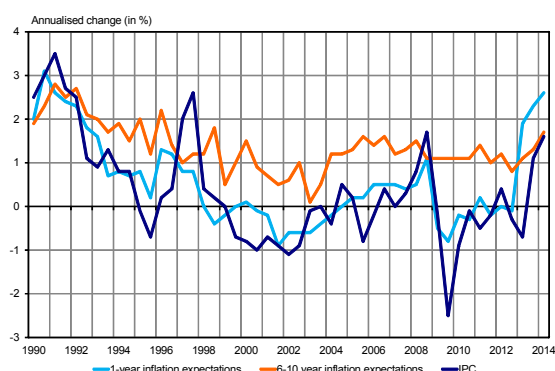
Source: Reuters, DG Trésor calculations; last points 10 April 2014.

#### Box 3: In Japan, the anchoring of long-term expectations did not prevent a decline into deflation

The Japanese experience suggests that the firm anchoring of the expectations of the experts surveyed in the consensus forecast as regards their long-term inflation outlook (6-10 years) is not a guarantee of the non-triggering of a deflationary spiral. Since the early 1990s, Japan has experienced three episodes of deflation, beginning in 1994, 1998 and 2008 respectively. However, during the 1998-2005 period, and despite the length of this episode, inflation expectations only adjusted very slowly, only approaching 0 for a short period in early 2003 (see Chart 14), five years after the onset of deflation. Similarly, between 2008 and 2012, long-term inflation expectations remained firmly anchored above 1%, at a time when prices were actually falling at an annualised rate of 0.7%. Short-term expectations (1 year) adjusted more quickly, and appear to have better predictive power.

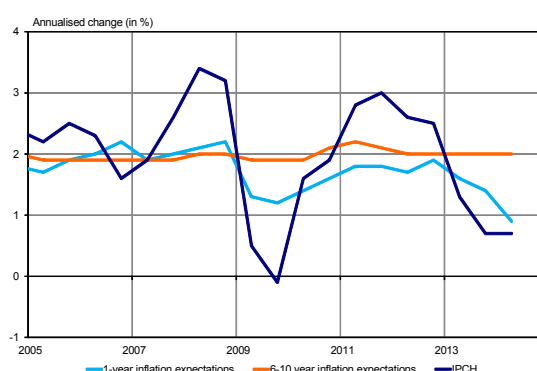
The situation in the euro area is not directly comparable with that of Japan in the 1990s. The Japanese central bank did not have an objective of price stability, and the banking system was very fragile. Nevertheless, in light of the Japanese experience, the current anchoring of expectations in the euro area (see Chart 15) does not guarantee that the risk of deflation will not materialise.

Chart 14: Inflation expectations in Japan



Source: Consensus Economics and IM; last points April 2014.

Chart 15: Inflation expectations in the euro area



Source: Consensus Economics and IMF; last points April 2014.

##### 4.2 The persistence of low inflation or the materialisation of the risk of deflation therefore depend on the policy mix

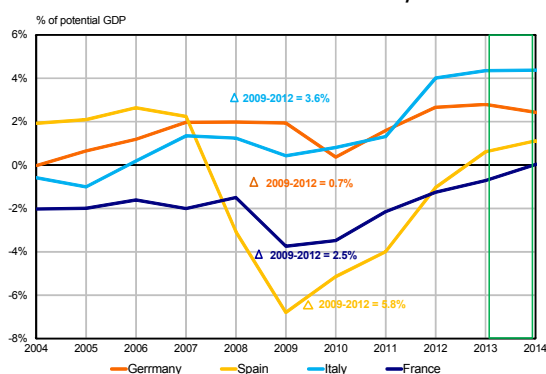
To guard against the risk of self-sustaining effects (see section 1.1) liable to halt the recovery and hinder the process of deleveraging and intra-area rebalancing, **it is vital to ensure the proper setting of (i) the fiscal adjustment**, the slowing of its pace being a supporting factor of the recovery in the euro area and **(ii) internal intra-area adjustments** (in particular, an increase in wages and public investment in Germany

would allow for a rebalancing by reducing the risk of deflation, while too great a decrease in salaries in the peripheral countries would tend to strengthen it, especially in services, see Chart 6).

**In this regard, the markedly slower average pace of fiscal consolidation in the euro area in 2014 (see Chart 16) will help bolster economic activity, thereby buoying inflation.**<sup>11</sup>

(11) Even though temporary upward effects on inflation stemming from fiscal consolidation (higher taxation) are liable to fade due to greater efforts on public spending.

Chart 16: Primamry structural balance



Source: European Commission.

Lastly, the credibility of the ECB would be reinforced if the steps it implemented were to return inflation to close to 2% as required by its mandate (see Box 4). The ECB acknowledges that sustainably low inflation is a risk factor (and that the appreciation of the euro compounds that risk). It has recently signalled its intention of taking vigorous action if signs of a decoupling of expectations - fuelled by continued low inflation - become evident. While interventions aimed at reinforcing forward guidance or action on interest rates (albeit with little effectiveness) previously seemed more likely, the ECB is now more openly foreshadowing the possibility of more robust support in the form of securities purchases.

#### Box 4: Asset purchases by the ECB and impact on inflation: theoretical effects and transmission channels

The forward guidance adopted in July 2013, followed by the reduction in the main refinancing rate in November<sup>a</sup> (-0.25pb to 0.25 %) represent the latest significant steps taken by the ECB to strengthen the accommodating bias of its monetary policy and act against the downside risks to inflation.

The ECB now has less leeway: the potential impact of a fresh cut of 10-15bp to its main refinancing rate (currently 0.25%), whether or not it is accompanied by a cut into negative territory of the interest rate on the deposit facility and a depreciation of the exchange rate, could be limited in the event of the emergence of a real risk of deflation.

In this case, the question of outright asset purchases by the ECB would be posed. Theoretically, the anticipated effects of asset purchases on prices stems from the support they provide to demand (via lower interest rates and rising asset prices, or a resumption of lending), and to a lesser extent from their upward impact on inflation expectations. Indirectly, the effect on the exchange rate should also result in higher inflation. The expected effects and transmission channels of a programme of asset purchases can be summarised as follows:

##### - Rising asset prices and lower interest rates via several channels:

- i) the withdrawal by the central bank of a portion of the assets on the market creates a "shortage" that contributes to the decline in the liquidity premium, while the positive effect on the perception of risk helps ease the risk premium;
  - ii) the signal effect<sup>b</sup>, given by the introduction of unconventional monetary policy reinforces forward guidance, i.e. the continuation of the expectation that interest rates will remain at a low level in the medium term, helping flatten the yield curve (theory of the term structure of interest rates);
  - iii) the portfolio rebalancing effect, which is based on the idea that different financial assets are not perfectly substitutable, which takes place through the supply and demand for assets. Change in the supply of assets purchased by the central bank affects their prices and those of similar assets, prompting investors who sold them to move to other assets, the prices of which increase and yields on which decrease with the increase in demand. For example, a reduction in the supply of non-risky assets and a decline in returns may trigger a switch in portfolios towards riskier securities, ultimately leading to an across-the-board rise in asset prices.
- **Positive wealth effects:** rising asset prices and the reduction of debt service costs improves economic agents' financial situation and can have a positive effect on the propensity to consume (lower savings) and invest (Tobin's q).
  - **Potential effects on supply and demand for credit:** credit supply can be promoted via excess reserves generated for banks, although this effect is not automatic and depends on the propensity of banks to lend. By contrast, the decline in interest rates on the assets concerned can result in lower rates on loans, while higher asset prices improve the balance sheets of economic agents selling securities (including banks), in addition to making it easier to use these assets as collateral.
  - **Higher inflation expectations:** lower long-term rates and the commitment to maintain low interest rates in the medium term can stimulate expectations in respect of demand and future inflation, thereby helping reduce the risk of a decline into deflation.
  - **"The exchange rate channel:** as evidenced by the experience in the US/UK, lower interest rates (on the securities selected) also tend to lower the exchange rate.

a. The ECB has also extended fixed-rate full-allotment liquidity provision until 7 July 2015.

b. The effect via this channel can however be ambiguous, the potential fuelling of inflation expectations could increase anticipated future interest rates via an inflation premium.

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