

Barrell, Ray; Fic, Tatiana

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Ray Barrell and Tatiana Fic\*

## Risks of Deflation versus Risks of Excessive Inflation in Europe

Economists are currently divided over the question of what represents a more immediate threat to the global economy – deflation or excessive inflation. Using stochastic simulations, this article extrapolates the likely inflation rates in individual European countries and the euro area as a whole. The results indicate that as the financial crisis continues to subside, policymakers should be vigilant about expeditiously rolling back the unconventional monetary policy measures implemented during the crisis.

In this note we look at the prospects for inflation in the euro area going forward. All forecasts are uncertain and we attempt to look at the uncertainty that we see. The reasons for the debate about the prospects for inflation are various, but two common and recurring features are the impact and scale of any spare capacity and the impact of the euro's recent fall. If the euro has fallen because monetary policy will be loosened and inflation will be higher, then deflation risks have been reduced. If the euro has fallen because risk premia have risen in response to the sovereign debt crisis, then the impact on inflation is much less clear. Higher risk premia mean lower output in the long run, and this may lead to higher inflation in some countries and lower in others, depending on whether their risk premia have risen and on their relationship to the non-euro world. Our probability distributions cover these outcomes. We first discuss the relative success of inflation policy in EMU.

### The Crisis and Inflation – Historical and Statistical Perspective

The success of EMU should be judged partly by its impact on inflation in a world where inflation was generally low and stable. Table 1 gives average inflation rates across the main OECD countries over the twelve years prior to EMU and the same period after its formation, along with an indicator of relative improvement over the period. Inflation performance improved most in Greece, Portugal, Sweden, Italy, Spain and the UK over this period, and it deteriorated in Ireland, the Netherlands and Belgium. Two of those which improved most were outside the euro area.

The euro area as a whole improved its average annual inflation rate between these periods by 1.36 percentage points. The level of inflation in the euro area, at 1.84 per cent, was higher than in Canada, Sweden and Japan but lower than in Australia, Denmark, the UK and the USA.

During the latest recession, inflation in many European countries fell to levels never observed before. In the second quarter of 2009, average prices in the euro area dropped by 0.4 per cent on an annual basis. This fall in inflation resulted from several factors: a dramatic decline in economic activity, a rapidly worsening situation in the labour market that reduced pressures on wages, a depreciation of the euro, and a plunge in oil prices as output significantly exceeded supply. Many of these factors were temporary and were likely to be reversed. Inflation decreased very quickly. Over the period 2008Q3 through 2009Q2, inflation fell from 3.8 per cent to -0.4 per cent. As the economy started recovering over the course of 2009, inflation picked up. The pickup in inflation was relatively fast, confirming that the deflation recorded in the second quarter of 2009 might have been a temporary phenomenon.<sup>1</sup> Figure 1 shows inflation developments in the euro area over the period 1992-2010.

The decomposition of average euro area inflation into its country components sketches an interesting picture of price developments in the single currency bloc. We have produced a sequence of charts showing how average inflation in the euro area developed over time and how inflation rates differed across individual members of the EMU. Figure 2 shows the distribution of inflation in the current EMU countries before the crisis (in the third quar-

\* National Institute of Economic and Social Research, London, UK.

<sup>1</sup> This may also suggest that the large degree of inflation inertia observable in Europe might have decreased for the duration of the crisis.

Table 1  
Relative Inflation Performance

	1985-1997	1998-2009	Difference	Rank
Australia	4.20	2.52	-1.68	8
Austria	2.19	1.72	-0.47	15
Belgium	1.97	2.00	0.03	16
Canada	2.94	1.57	-1.37	10
Denmark	2.50	1.88	-0.62	14
Euro Area	3.20	1.84	-1.36	—
Finland	3.34	1.76	-1.58	9
France	2.27	1.39	-0.88	13
Germany	2.10	1.16	-0.94	11
Greece	14.17	3.38	-10.79	1
Ireland	2.93	3.12	0.20	17
Italy	5.43	2.35	-3.08	4
Japan	1.05	-0.76	-1.80	7
Netherlands	1.84	2.28	0.44	18
Portugal	10.36	2.50	-7.86	2
Spain	5.12	1.48	-3.64	3
Sweden	5.46	2.88	-2.58	5
UK	4.49	2.02	-2.47	6
USA	3.01	2.07	-0.93	12

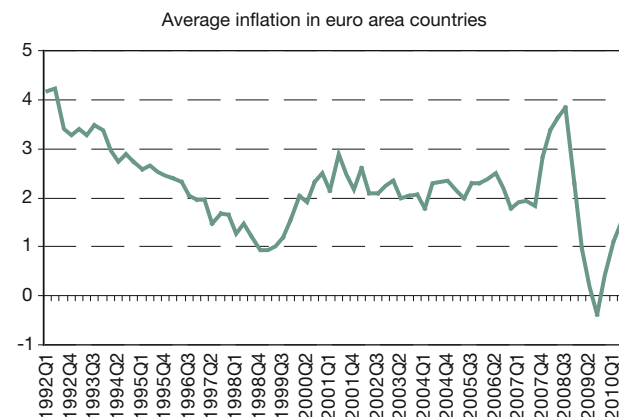
Note: 2009 figures for the Netherlands, Portugal and Spain are based on HICP, all other data are for the consumer expenditure deflator.

ter of 2007), at the outset of the crisis (in the third quarter of 2008), at the height of the crisis (in the third quarter of 2009), and in the second quarter of 2010 (the latest available observation).

In the middle of 2007, before the global turbulences in financial markets started, inflation in the majority of euro area countries remained below (or close) to the 2 per cent inflation target set by the ECB. In the run up to the crisis, on the back of high economic growth, soaring oil prices, expanding bubbles in house prices and increased volatility in financial markets, inflation picked up significantly. In all euro area countries, inflation moved into territory much higher than the target. A year later at the height of the crisis, many of the euro area countries experienced deflation driven by severe economic slack, weakening labour markets and a large drop in oil prices.

Over the last three quarters inflation has picked up again, in many countries reaching a level just below the ECB target. However, the distribution of inflation rates across EMU members seems to be much more uneven (the distribution is multimodal) than it was before the crisis, re-

Figure 1  
Inflation in the Euro Area over 1992-2010



vealing the structural difficulties from which some countries are suffering. In Ireland, recession and the pricking of the housing bubble resulted in a prolonged period of deflation, with the second quarter of 2010 marking the fifth consecutive quarter of falling prices. In Greece, which is fighting with a large budget deficit, one of the costs of which is a high risk premium which raises production costs in the short run, inflation was very high, exceeding 5 per cent, a level unobserved since 1997. However, there may be other reasons for high inflation in Greece.

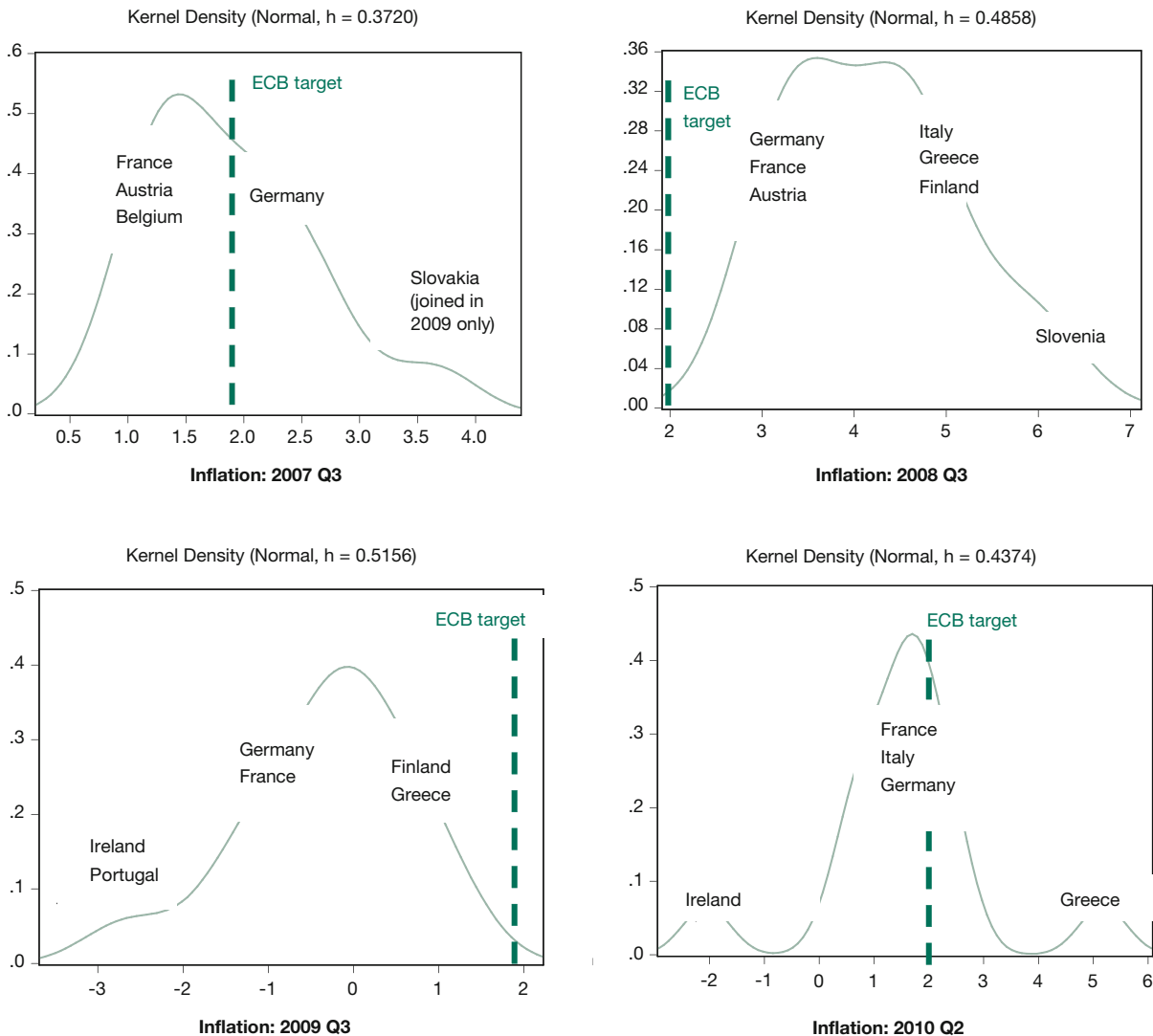
### The Output Gap

One of the key determinants of the inflation developments described above has been the size of the output gap, and there is a great deal more uncertainty about its current size than has been normal since EMU was formed. Its distribution across countries is also probably wider than in the past. The financial market crisis that started in the summer of 2007 and worsened in the autumn of 2008 has led to a sharp short-term decline in output that exceeds its longer-term impact. We estimate that the permanent scar on output per person hour might be around three per cent. The scar is largely driven by a presumed 300 basis point rise in risk premia along with the structural deterioration of budget balances in all countries. This deterioration is worst in Spain and Ireland because of their previous reliance on taxation from an excessively buoyant housing market. The risk premium effect is likely to be common. The size of the scar differs between countries, and as Barrell<sup>2</sup> discusses, it will depend upon the relative size of the capital stock as compared to GDP. It will also

<sup>2</sup> R. Barrell: Long term scarring from the financial crisis, in: National Institute Economic Review, No. 210, 2009, pp. 36-38.

Figure 2

### Inflation Distribution Before the Crisis, at the Outset of the Crisis, at the Height of the Crisis and at the End of the Crisis



depend on the level of the user cost of capital, and hence the rise in the risk premium will also have more effect in countries such as Germany, as we can see from Figure 3, which is abstracted from Barrell.<sup>3</sup>

Policy responses will have closed some of that gap, albeit with some cross-country variation. Table 2 gives the fall in output in selected countries from the second quarter of 2008 to the first quarter of 2010. The largest cumulative falls were in Finland, Ireland and Italy, followed by the

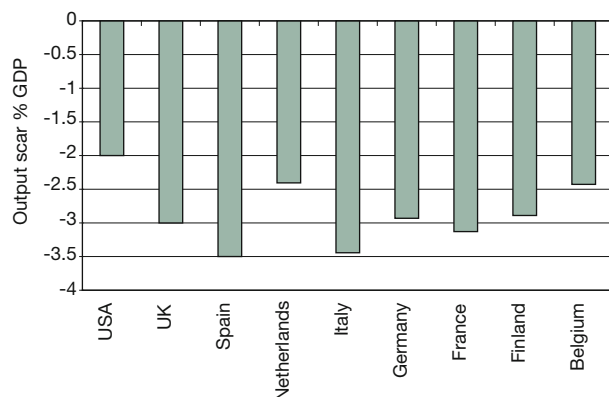
3 Ibid.

UK, Germany and Japan. Weale<sup>4</sup> and Barrell and Holland<sup>5</sup> discuss the factors that have contributed to this decline. Initially, economies that had a larger trade balance were more affected, as were countries that had a currency appreciation. However, the scale of the banking crisis does not seem to have influenced the scale of the decline, as the largest falls have been seen in countries that did not have a banking crisis. The ability and willingness to use

4 M. Weale: International recession and recovery, in: National Institute Economic Review, No. 209, 2009, pp. 4-7.

5 R. Barrell, D. Holland: Fiscal and financial responses to the economic downturn, in: National Institute Economic Review, No. 211, 2010, pp. 115-126.

Figure 3  
Inflation in Euro Area Countries over 1992-2010



monetary and fiscal policy to offset the crisis are at least part of the reason for the differences between countries over this period.

While none of the countries have reached their pre-crisis level of activity yet, in many countries the first quarter

of 2010 was the third consecutive quarter of rising GDP. GDP has continued to rise in the euro area, the USA, Canada, Germany (where 2010Q1 marked the fourth quarter of growth) and the UK (where 2010Q1 marked the second quarter of growth). The economic activity remained somewhat lacklustre in Finland, Ireland, Spain and Italy, although the latter three countries saw positive growth rates in the first three months of 2010. Output gaps are likely to be large in countries like Finland, where the cumulated fall in output is much in excess of our estimate of the scar, whilst the output gap is likely to be much lower in countries like Belgium, where this is not the case. On this basis, Germany, Italy, Ireland and Finland, countries where output falls have been large, are more at risk of deflation than the euro area average. However, deflation risks are not either 2 per cent inflation or minus 1 per cent inflation, but rather a continuum around a central distribution. In normal times, risks are distributed normally, whereas in abnormal times such as now, they can be skewed, especially by the existence of a zero lower bound on interest rates that prevents monetary policy from responding to deflation in some circumstances. Tails on the downside then become long.

Table 2  
The Evolution of Output from the Start of the Crisis

	AU	AT	BE	CA	DK	EMU	FI	FR	DE	GR	IE	IT	JP	NL	PT	ES	SE	UK	US
2008Q2	0.59	0.23	0.39	-0.02	1.18	-0.39	0.50	-0.62	-0.57	0.62	-1.89	-0.66	-1.04	-0.01	-0.10	-0.02	0.09	-0.27	0.36
2008Q3	0.36	-0.67	-0.23	0.09	-1.03	-0.46	-0.81	-0.20	-0.32	0.13	-0.25	-1.13	-1.09	-0.41	-0.68	-0.55	0.04	-0.90	-0.68
2008Q4	-0.78	-1.36	-2.13	-0.79	-2.28	-1.92	-3.43	-1.63	-2.44	-0.69	-4.77	-1.99	-2.49	-1.18	-1.39	-1.08	-4.00	-2.08	-1.37
2009Q1	0.56	-2.11	-1.74	-1.81	-1.83	-2.59	-5.27	-1.53	-3.52	-1.02	-2.54	-2.88	-4.20	-2.56	-1.77	-1.70	-2.95	-2.34	-1.65
2009Q2	0.83	-0.55	-0.09	-0.71	-1.85	-0.05	-0.41	0.22	0.44	-0.30	-0.34	-0.25	1.69	-0.96	0.71	-0.96	0.71	-0.70	-0.18
2009Q3	0.26	0.71	0.74	0.22	0.59	0.40	0.52	0.28	0.73	-0.47	-0.20	0.39	0.11	0.58	0.17	-0.28	0.34	-0.26	0.55
2009Q4	1.10	0.30	0.32	1.21	0.20	0.14	-0.23	0.57	0.18	-0.78	-2.66	-0.07	1.13	0.54	-0.12	-0.15	0.43	0.41	1.36
2010Q1	0.50	-0.09	0.05	1.48	0.46	0.20	-0.45	0.13	0.16	-1.00	2.66	0.42	1.23	0.25	1.06	0.08	1.44	0.33	0.68
Cumulative	3.43	-3.56	-2.69	-0.31	-4.56	-4.66	-9.58	-2.77	-5.33	-3.52	-9.99	-6.18	-4.66	-3.74	-2.11	-4.65	-3.90	-5.80	-0.93

Table 3  
The Evolution of Annual Inflation from the Start of the Crisis

	AU	AT	BE	CA	DK	EMU	FI	FR	DE	GR	IE	IT	JP	NL	PT	ES	SE	UK	US
2008Q2	3.26	3.72	4.97	1.39	3.70	3.64	3.90	3.68	2.99	4.76	3.62	3.77	0.53	2.02	2.92	4.66	3.64	3.34	3.76
2008Q3	4.16	3.67	5.57	2.32	4.51	3.84	4.51	3.62	3.24	4.76	3.41	4.05	0.96	2.90	3.15	4.96	3.95	4.88	4.35
2008Q4	4.22	2.23	3.56	1.48	2.95	2.29	3.72	2.01	1.60	3.02	2.14	2.88	-0.32	1.99	1.60	2.48	2.60	3.88	1.73
2009Q1	3.98	1.05	1.55	1.04	1.67	0.96	2.40	0.70	0.75	1.78	0.16	1.36	-1.27	1.82	-0.14	0.48	2.05	3.01	0.44
2009Q2	3.25	0.09	-0.19	0.27	1.05	0.17	1.74	-0.23	0.28	0.85	-1.55	0.86	-1.80	1.58	-1.14	-0.66	1.68	2.12	-0.19
2009Q3	2.73	-0.09	-1.16	-0.46	0.62	-0.38	1.18	-0.46	-0.46	0.81	-2.65	0.12	-2.84	-0.07	-1.49	-1.00	1.68	1.46	-0.69
2009Q4	2.51	0.59	-0.19	1.12	0.93	0.42	1.24	0.42	0.37	1.96	-2.75	0.73	-2.55	0.60	-0.84	0.24	2.33	2.09	1.23
2010Q1	2.68	1.32	1.17	1.48	1.91	1.12	1.47	1.46	0.84	3.04	-2.41	1.26	-2.14	0.45	0.30	1.18	2.66	3.20	2.00
2010Q2	3.63	1.77	2.41	1.89	2.00	1.51	1.44	1.86	1.02	5.18	-2.05	1.60	-1.68	0.43	0.95	1.66	1.84	3.44	1.84

### What Are the Risks of Deflation vs. Excessive Inflation in the Euro Area?

Table 3 shows the evolution of annual inflation from the start of the crisis. With the economy recovering and inflation having already returned to its pre-crisis levels, we do not forecast deflation in the euro area as a whole, although it is present in Ireland. Figure 4 shows a fan chart of inflation in the EMU. With 95 per cent probability, inflation in the euro area will settle between 0.9 and 1.5 per cent in 2010 and 1.2 and 2.4 per cent in 2011. The central path, although increasing, is expected to remain below the 2 per cent ECB target in the next years to come. As the output gap continues to close, inflationary pressures will start building up. The high budget deficits and related weakness of the euro will also contribute to rising inflation. Rising oil prices will result in higher fuel prices. The fan chart plots the 80, 90 and 95 percentage bounds around our July 2010 forecast out to 2015. They are generated by stochastic simulations on our global model NiGEM.<sup>6</sup>

6 See R. Barrell: Forecasting the World Economy, in: D.F. Hendry, N.R. Ericsson: Understanding Economic Forecasts, Cambridge, MA, MIT Press 2001, pp. 152-173.

Figure 5  
Fan Charts of Inflation: Germany, France, Italy, Spain

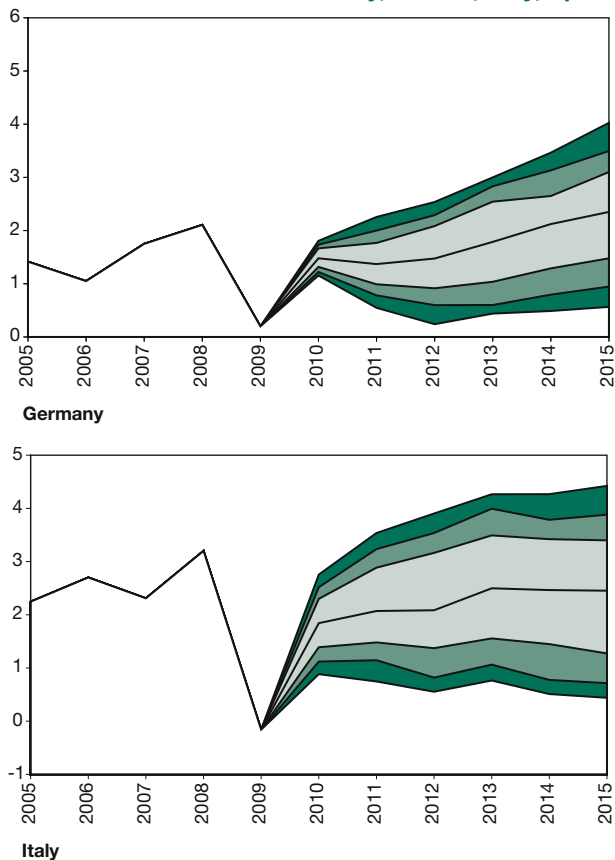
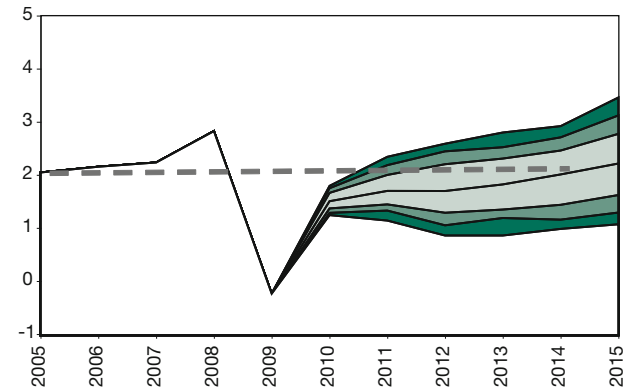


Figure 4  
Euro Area Inflation Fan Chart



Inflation developments are expected to vary across European countries, reflecting various output gap sizes and country-specific pressures coming from labour markets. Figure 5 shows fan charts of inflation for the four biggest economies of the EMU: Germany, France, Italy and Spain.

With 95 per cent probability, inflation in Germany will be in the range 1.2 to 1.8 per cent this year and 0.5

to 2.3 per cent next year. On this basis, the probability of deflation is relatively low. For France, the corresponding bands are 1.6 and 1.9 per cent in 2010 and 0.8 and 2.0 per cent in 2011. The ranges are relatively narrow for 2010 as we are already halfway through the year, but they widen noticeably into next year. For Italy and Spain, the range is somewhat wider, by about 1.8 percentage points in 2010 and 2.5 percentage points in 2011, reflecting greater uncertainty surrounding inflation developments and the general macroeconomic outlook in these countries. In Italy, with 95 per cent probability, inflation will settle between 0.9 and 2.7 per cent this year and 0.7 and 3.5 per cent in 2011. In Spain, inflation may be as low as 1.1 and as high as 2.8 per cent this year, and next year will see with 95 per cent probability inflation between 1.2 and 4.2 per cent. The larger degree of uncertainty and the wider bands may imply that the risks of deflation cannot be fully excluded (deflation might materialise e.g. if Europe experienced a severe second dip of the recession). However, the risks of inflation exceeding the ECB target seem to be more serious. And while there is a 5 per cent probability that prices in Italy or Spain will decline over the medium term, there is 20 per cent probability that inflation in the euro area will exceed 2 per cent next year.

### Policy Implications

The main challenge for monetary policy is to anchor inflation expectations. Monetary policy has adopted a wide range of anti-crisis measures, both conventional and unconventional. The unconventional monetary policy measures in the euro area, predominantly encompassing credit easing and various measures influencing interbank market conditions such as exceptional long-term operations, broadening of eligible collateral, inter-central bank foreign exchange swap lines, as well as affecting the nonbank credit market through the purchase of covered bonds, are now being rolled back. All these measures could potentially raise inflation if they were allowed to feed into the money stock and demand.

As the worst effects of the crisis ease, rising inflation in the euro area will require interest rate increases. To avoid the risk of higher (than necessary) interest rates holding back economic growth, the consolidation of public finances is crucial. Balancing budget deficits over the medium term will guarantee the optimal policy mix, ensuring sustainable growth and stable prices in the long run and avoiding unnecessary macroeconomic costs in the short term.