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VII. INFLATION PERSISTENCE IN THE EURO AREA

Introduction

Headline inflation in the euro area has, on average, remained stubbornly above 2 per cent – the upper limit of the European Central Bank’s definition of medium-term price stability – for most of the period since mid-2000. This persistence may seem puzzling in the light of weakness in activity and is only partly explained by factors like oil and food prices, and exchange rates. Core inflation, which excludes some of these elements, and the service component of the index, a measure less sensitive to exchange rate developments, have both been rising since late 1999 (Figure VII.1, top panel). At the same time, the inflation rates across euro area economies have diverged (Figure VII.1, middle panel). The policy issues that arise concern both the appropriate rate of inflation that should be used to guide monetary policy decisions and whether structural reforms could enhance the responsiveness of inflation to weak economic activity.

Euro area inflation stubbornly above 2 per cent

Inflation divergence in the euro area

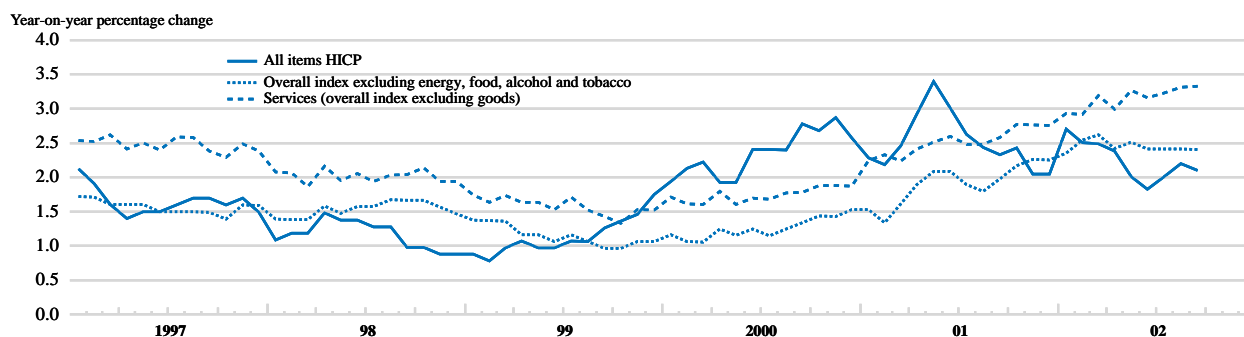
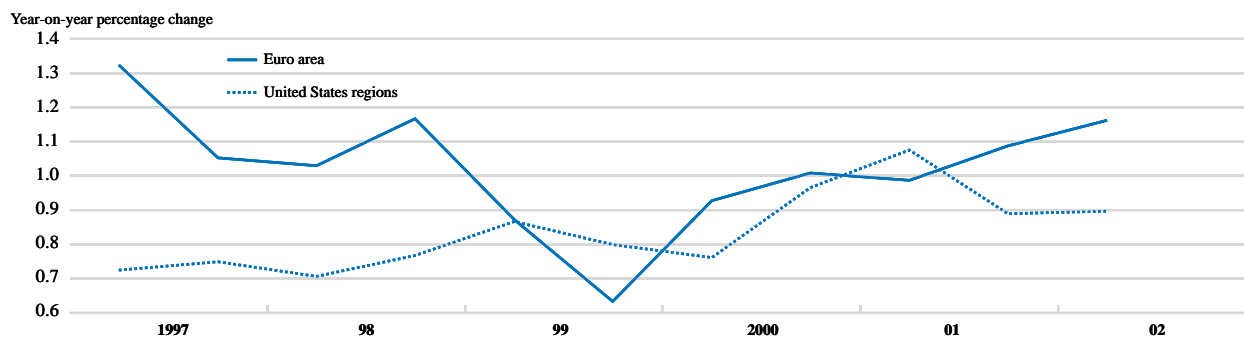
Divergent inflation rates within a monetary union are not a bad thing *per se*. In the euro area, where alternative mechanisms for adjustment to differing real economy developments are weak, a greater reliance on relative price and wage changes among countries is needed. For example, a regional slowdown in the United States is usually associated with sizeable migration flows to other areas whereas there is little emigration from euro area countries experiencing weak activity towards those with a more buoyant economy.

Divergent inflation rates reflect part of the adjustment mechanism...

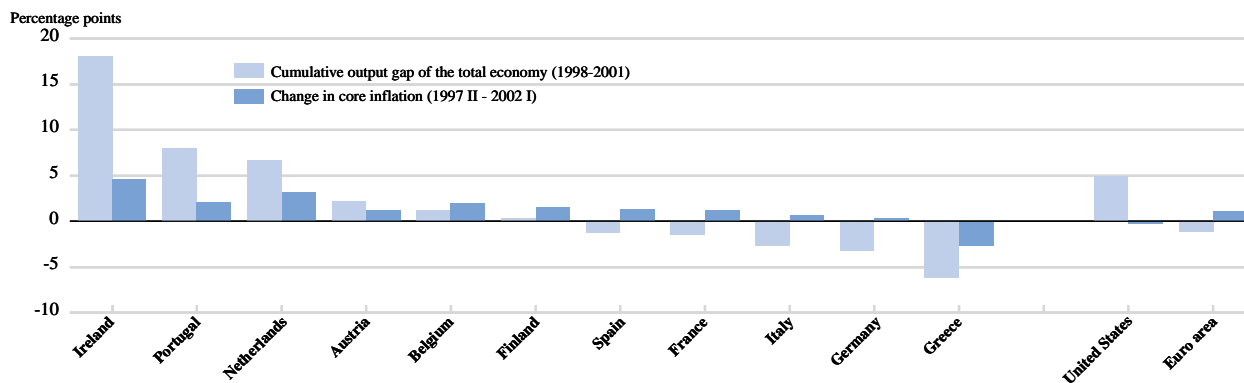
In this regard, the recent persistence of aggregate euro area inflation may be due to the fact that national inflation rates have not sufficiently reflected very different activity developments. In particular, in some of the larger economies, where demand has been weak relative to supply, core inflation rates did not move so as to offset higher rates in the other countries where the opposite occurred (Figure VII.1, bottom panel). In Germany and Italy for example, core inflation has either risen or remained approximately stable despite fairly significant output gaps, a measure of the difference between demand and supply. Indeed, it appears to be a generalised phenomenon that inflation has risen in countries with positive cumulative output gaps but has not fallen in those with negative cumulative gaps. This feature of the data, apart from possible mis-measurement of potential output and the corresponding output gaps, could reflect the presence of nominal rigidities that are hampering inflation adjustment in countries where activity is weak.

... but nominal rigidities may be hampering it

Figure VII.1. Inflation developments in the euro area

A. Euro area inflation¹B. Inflation dispersion²

C. Cumulative output gap and core inflation in euro area countries



1. Based on harmonised CPI (HICP).

2. Measured by the standard deviation of year-on-year percentage changes of the respective regional price indices (semi-annual data). The number of regions is 25 for the United States and 12 for the euro area.

Source: Eurostat, New Cronos, US Bureau of Labor Statistics and OECD.

Adjustment in a low inflation environment

Reasons behind nominal rigidities

While several factors related to price and wage determination in an imperfectly competitive environment could account for such effects, the presence of downward nominal wage rigidities has received the most attention. The strong resistance by workers to money wage cuts when demand conditions weaken could reflect some form of money illusion or, partly related, perceptions that worker salary reductions are unfair. Employers, for their part, could be reluctant to enact them for fear of damaging workers' morale and productivity.¹ When inflation is low, the importance of such nominal rigidities increases. In this context, inflation facilitates both relative and aggregate wage adjustments, with benefits for employment.

Resistance to nominal wage cuts may reflect psychological factors...

The resistance to money wage cuts can be re-enforced by the regulatory environment framing the relationship between employers and employees, including the process of contract renegotiations. In some countries, labour market legislation sets the terms of employment in permanent jobs as a legal contract that can only be changed by mutual consent. While, in principle, the spectre of job losses could persuade workers to consent to a wage cut, the threat may not be that strong in places where employees benefit from generous unemployment income support, stringent employment protection legislation and/or union power. These features, which can lower the response of inflation to activity, could be stronger in the euro area compared with other monetary unions. Nonetheless, it is likely that all monetary unions where financial contracts are fixed in nominal terms will experience some degree of rigidity, as, for example, workers become less amenable to accepting nominal wage restraint if their debt servicing obligations are fixed.

... as well as institutional arrangements

Rigidities may arise from the manner in which prices are adjusted. For instance, firms may not automatically change their prices every time they notice a shift in the demand for their products. Besides the administrative costs associated with such changes, there are concerns that frequent price changes might hurt relations with clients.² On the other hand, keeping prices unchanged incurs costs. These will rise the more current prices deviate from desired ones. Hence, changes may take place only after the desired price has deviated from its current level by a substantial margin, leading to aggregate price rigidities in the short run.³ In this context, the frequency and size of price adjustments will rise with inflation so that the latter become more sensitive to demand conditions at higher inflation rates.⁴ An additional possible source of downward nominal price rigidity is that firms operating in markets characterised by

Prices can also be sticky in response to weak demand

1. See Bewley (1999).

2. These two sources of costs are lumped together in the economic literature under the label "menu costs".

3. This is true only if, initially (*i.e.* before demand conditions change), the actual price coincides with the desired price. Otherwise even a small change in the desired price could trigger an adjustment by the firm.

4. Furthermore, with a positive inflation rate, prices will tend to become more flexible upwards than downwards, causing a different reaction of inflation to positive and negative demand shocks. This is because firms facing declines in the demand for their products are less willing to incur the costs of changing their prices given that the desired relative price decline can be brought about automatically by inflation. In contrast, firms confronted with an increase in their desired relative price will face a proportionately larger revenue loss if they do not compensate for inflation and hence are more willing to incur the menu costs and change prices more frequently (Ball and Mankiw, 1994).

monopolistic competition may wait until at least one of the competitors first changes prices for fear of getting into a price war.

Evidence from micro data

Some survey evidence supports the existence of money illusion

The type of money illusion required to generate downward nominal wage rigidity has received some support from survey evidence in which a large majority of respondents indicated they would prefer a 7 per cent money wage increase when inflation was 12 per cent to a 5 per cent money wage cut when prices were stable.⁵ This is partly reinforced by more recent evidence showing that only a minority of people would disagree with the suggestion that job satisfaction would improve were the pay to go up, even if this was offset by an equivalent increase in prices. However, some have questioned the relevance of such information, arguing that it relies on hypothetical situations rather than how agents would respond to actual events.⁶

Data on wage settlements show downward nominal rigidities...

Several studies using micro data on wage settlements have provided some support for the hypothesis of downward nominal wage rigidity. In most cases, the evidence is based on the distribution of nominal wage changes which tends to be asymmetrical; that is, while nominal wage cuts are not uncommon, negative wage adjustments are significantly fewer than positive ones and there seems to be a disproportionate percentage of wage contracts that does not change on an annual basis. Furthermore, this percentage appears to be negatively correlated with inflation.⁷

... which may be a factor in a number of euro area countries

Even though the majority of studies have focused on countries outside the euro area (in particular the United States), there is some recent evidence concerning individual member countries. For instance, there are indications that wages might be less likely to be cut in Germany and Italy than in France, Spain or Ireland.⁸ Earlier evidence also points to downward earnings rigidity in Germany, potentially implying that inflation rates below 3 per cent are shown to lead to higher equilibrium unemployment.⁹ Nonetheless, it needs to be kept in mind that, to the extent earnings (and thus actual labour costs) contain flexible elements, such as overtime payments, bonuses, etc., wage costs may be reduced without requiring cuts in negotiated wage rates. More flexible elements have been put into German wage contracts since the mid-1990s.

However, their macro impact may not be that large

While the main characteristics of the distribution of wage changes appear to be well documented and relatively uncontroversial,¹⁰ the impact of these rigidities at an aggregate level is considerably less well established. Altogether, the general conclusion

5. The two situations may not be that comparable. Taking account of taxes, real returns on bonds could actually be lower in the high inflation case. At the same time, however, most households have nominal debts, the value of which would decline with inflation, as against real assets that would likely remain unchanged.

6. On these points, see Kahneman *et al.* (1986), Shiller (1997) and Yates (1998).

7. See in particular, Akerlof *et al.* (1996) for the United States. These results, however, have been disputed on the ground that wage settlement data tend to exaggerate the extent of rigidities in the aggregate economy (Crawford, 2001, Card and Hyslop, 1997, and Smith, 2000).

8. In the European Community Household Panel, roughly 27 per cent of the Germans who did not switch jobs between 1995 and 1996 had no changes in their nominal wages. The equivalent figure was 27 per cent for Italy, 9 per cent for France, 5 per cent for Spain and 3 per cent for Ireland. In the United Kingdom 6 per cent of the sampled workers sustained no changes in their wages. While these figures vary significantly over time, the relative performances appear to be reasonably well defined (Dessy, 2002). There may, as well, be timing issues that could be affecting these results.

9. See Knoppik and Beissinger (2001). This refers to the period 1975-95.

10. There are, however, differences in the interpretation of what these stylised facts actually mean. For example, the bunching of wage changes at zero can be the outcome of "symmetric" causes such as long-term contracts, measurement error and rounding (Smith, 2000).

of the studies that have considered this question is that the overall impact of nominal wage rigidities on economic activity is too modest to have a significant impact on aggregate inflation.¹¹

As regards price rigidity, some survey evidence has provided support for the notion that firms have more of an aversion to price cuts than to price increases in response to changes in costs of comparable size.¹² In short, it appears that while increases in costs are quickly passed on into higher prices, declines tend to be absorbed, at least initially, by widening margins.¹³ Furthermore, there is little evidence of the first-mover problem, *i.e.* that firms will delay price cuts to avoid being the first to do so.¹⁴ However, the latter evidence concerns mainly the United States where competitive pressures may be stronger than in a number of European countries.

Cost increases are passed on more quickly to prices than reductions

Evidence from macro data

As an alternative to the evidence based on micro information, several studies have turned to aggregate data on inflation and output (or wages and unemployment) to test whether significant and systematic differences in the relationship can be uncovered when economic conditions vary. The most common approach used in these studies is to test whether the response of price (wage) inflation to excess demand in the product (labour) market is significantly higher than the response to excess supply.¹⁵ Using this approach, evidence of asymmetric effects between excess supply and demand situations has been found for all EU countries except Spain, the Netherlands and Finland.¹⁶ This corroborates earlier findings based on wage and price adjustment to unemployment gaps that found some indications of different *hysteresis*¹⁷ effects in labour markets in the cases of Germany, France and Italy. Evidence using pooled data for the seven major industrial countries also provided support for the assumption of a different relationship between inflation and output depending on whether or not there are conditions of excess demand or supply.¹⁸

At the macro level, excess demand and supply have different effects...

These results have not gone unchallenged. One study found empirical evidence of asymmetric effects of output gaps in the cases of the United States, Japan and Canada but not for the major European countries.¹⁹ More recently, signs of these effects in European countries were found in the relationship between the output and

... although the evidence is mixed

11. See Card and Hyslop (1997), Yates (1998) and Nickell and Quintini (2001). However, none of these studies covers euro area data.

12. See Hall *et al.* (1996).

13. While empirical support to the menu costs argument is found in Belgium, the evidence presented suggests that the implied downward rigidity is a function of the level of inflation and, hence, would likely disappear under price stability. See Aucremanne *et al.* (2002).

14. See Blinder (1995).

15. Technically, this is done by entering positive and negative output gaps separately in a Phillips curve type regression. This is equivalent to treating the asymmetry as being piece-wise linear, meaning that the sensitivity of inflation to the output gap depends on the sign of the latter but it is independent of the absolute size of the gap or the prevailing level of inflation.

16. See Mayes and Virén (2000).

17. Different *hysteresis* effects imply that, while negative demand shocks tend to generate a persistent increase in unemployment, with little downward pressures on wages, positive shocks are accompanied by a transitory decline in unemployment and stronger increases in wages. This could be due to the fact that the human capital of workers who lose their job may deteriorate to the point where they become *de facto* unemployable and hence no longer put effective downward pressures on the wage demand of workers (Giorno *et al.*, 1997).

18. See Laxton *et al.* (1995).

19. See Turner (1995).

the unemployment gaps, but not between the output gap and inflation.²⁰ Overall, even though the empirical findings based on macro data appear to point to the existence of such effects, the evidence remains mixed.

The role of policy in facilitating adjustment

Given that further significant cyclical convergence is unlikely...

An increase in the degree of business cycle synchronisation within the euro area would lessen, although not eliminate, the need for relative price adjustments. However, considering the steady increase in the degree of convergence already observed (Figure VII.2), it is not clear how much further progress can be achieved. Hence reliance on relative price changes is likely to remain a key adjustment mechanism for the area.

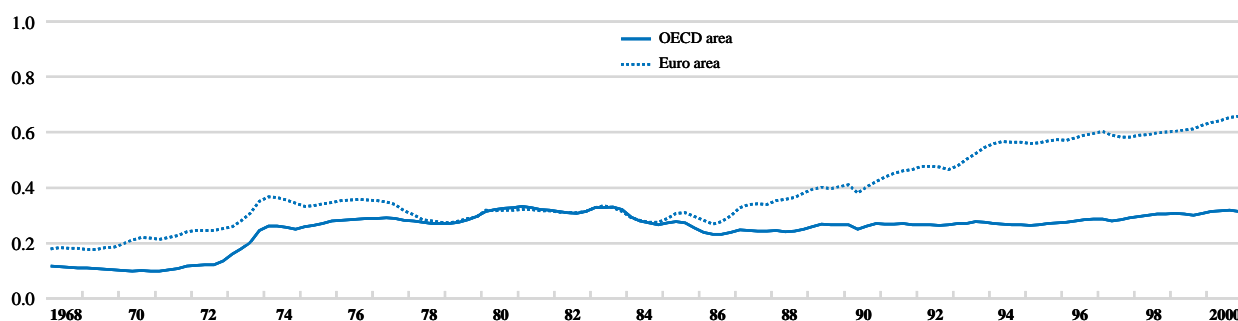
... it has been argued that higher inflation helps to “grease” adjustment...

Although the evidence reported above is not uncontroversial, some have argued that downward nominal wage or price rigidity could be sufficiently important to justify higher than existing inflation rates, on the grounds that it would provide a beneficial “grease” effect on the wheels of economic activity. For instance, on the basis of US evidence, it has been suggested that an inflation rate of around 3 to 4 per cent could eliminate the main source of these adjustment problems.²¹ Assuming that cross-country divergences in output performance continue to occur in the euro area, this raises the question of whether the objective of keeping inflation below 2 per cent is too stringent to allow for smooth relative price adjustments between regions in different cyclical positions.

... although it is not likely to be as effective as structural reform

There are also arguments against such a policy change. For instance, a move to increase the inflation rate above the level consistent with price stability may make it more difficult for the European Central Bank to credibly commit that it will not tolerate further increases. While other central banks have set inflation targets at, or just

Figure VII.2. Bilateral output gap correlations for different country groups



Note: The figure shows for the OECD area and the Euro area the average of bilateral correlations between output gaps in ten-year moving windows. The output gaps are calculated using an HP 1600 filter.

Source: OECD.

20. See Aguiar and Martins (2002).

21. See Akerlof *et al.* (1996).

above, a rate of 2 per cent,²² and have achieved stable inflation outcomes, none has changed its initial target, with the exception of New Zealand.²³ Furthermore, it is not clear that allowing somewhat higher inflation rates would necessarily alleviate adjustment rigidities. In fact, the evidence of these types of adjustment problems from macro data is largely based on episodes prevailing at a time when average inflation was significantly higher than currently. Conversely, it could be argued that once inflation has been low for a long time, the extent of money illusion uncovered in some studies is likely to diminish along with the reluctance to accept money wage cuts. This process could be further aided by structural reforms, particularly to the extent that such reforms enhanced productivity growth. In a situation where adjustment is required, strong productivity growth would allow the nominal wage of workers to be maintained, or even increased by less than the growth of productivity. This, in turn, would provide firms with more scope to respond to changes in demand.

22. An important difference is that the inflation target set in these countries represents a mid-point rather than a ceiling.

23. Recently, the authorities have redefined their target range of 0 to 3 per cent to 1 to 3 per cent.

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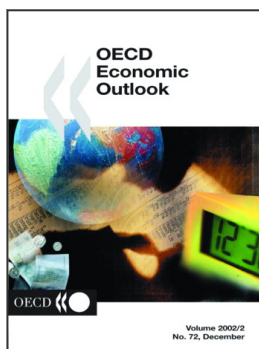
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Conventional signs

\$	US dollar	.	Decimal point
¥	Japanese yen	I, II	Calendar half-years
£	Pound sterling	Q1, Q4	Calendar quarters
€	Euro	Billion	Thousand million
mbd	Million barrels per day	Trillion	Thousand billion
..	Data not available	s.a.a.r.	Seasonally adjusted at annual rates
0	Nil or negligible	n.s.a.	Not seasonally adjusted
–	Irrelevant		



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