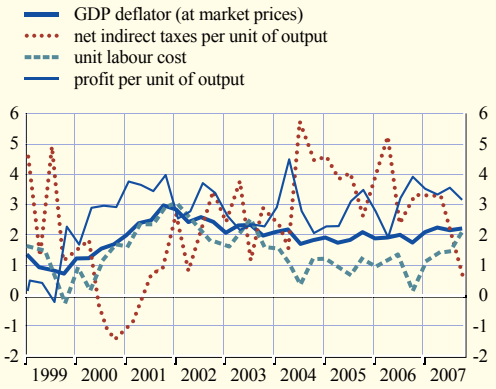
Box 4

JUDGING SECTORAL INFLATION DEVELOPMENTS ON THE BASIS OF NATIONAL ACCOUNTS DATA

A variety of different data sources are available for the conjunctural assessment of price pressures in the euro area economy. In particular, the national accounts provide valuable input into understanding prices, labour costs and profits at both the aggregate and sectoral levels. This box looks at national accounts price and cost data in order to gauge current inflationary pressures in the euro area. In addition, information from the latest release of the EU KLEMS database (March 2008) is used to evaluate the role played by productivity and competition in driving sectoral inflation over the longer run.

Decomposition of the euro area GDP deflator

(annual percentage changes)



Sources: Eurostat and ECB calculations.
Note: Net indirect taxes refer to taxes on production and imports minus subsidies.

Price pressures at the aggregate level

In the national accounts framework, gross domestic product (GDP) can be split into the various components of income. In connection with this, the GDP deflator – which measures the "price" of total value added per unit of output – can be decomposed into unit labour costs, profits per unit of output and net indirect taxes (taxes on production and imports less subsidies) per unit of output.[1] This decomposition is depicted in the chart, which shows that the annual rate of change in the GDP deflator (at market prices) has remained relatively contained in recent years, although it picked up over 2007 to reach 2.2% on average in the second half of the year. Since 2004, there have been somewhat divergent developments in the components of the GDP deflator. Profits per unit of output and indirect taxes per unit of output have typically shown annual increases above overall value added inflation, whereas unit labour cost growth has been below. In 2007 as a whole, per unit profits rose by 3.4%, and growth in indirect taxes per unit of output slightly exceeded overall value added inflation while moderating markedly over the year. Moreover, unit labour cost annual growth rose significantly over the course of 2007 to reach 2.0% in the fourth quarter.

An alternative way of decomposing the GDP deflator is to view profits as a mark-up over labour costs. This way of presenting national accounts data offers the advantage of allowing for a similar decomposition at a disaggregated sectoral level (see Table A, which also reports a split of unit labour costs between growth in compensation per employee and labour productivity growth per person employed). The rise in the euro area GDP deflator has reflected both positive unit labour cost growth and an increase in mark-ups. The latter development mirrors the steady decline in the wage share – which is simply the inverse of the profit mark-up indicator – from around 65% in 2000 to 62% in 2007. In 2007 the contribution of unit labour costs to value added inflation increased considerably, while that of mark-ups dropped over the course of the year.

1 For an overview of the different uses of national accounts data for inflation conjunctural analysis, see the box entitled "Using national accounts data to gauge price pressures in the euro area" in the December 2006 issue of the Monthly Bulletin.

Table A National accounts data: total economy and main economic sectors

(annual percentage changes)

	1996-2007	2004	2005	2006	2007	2007 Q2	2007 Q3	2007 Q4
Total economy								
GDP deflator (at factor cost)	**1.8**	**1.7**	**1.7**	**1.6**	**1.9**	**1.9**	**1.9**	**1.9**
Profit mark-up indicator	0.5	0.7	0.7	0.7	0.4	0.5	0.5	-0.1
Unit labour cost	1.3	1.0	1.0	0.9	1.5	1.4	1.4	2.0
Compensation per employee	2.2	2.2	1.8	2.2	2.3	2.2	2.2	2.5
Labour productivity growth	0.9	1.1	0.8	1.3	0.8	0.8	0.8	0.5
Industry excluding construction								
GDP deflator (at factor cost)	**0.7**	**0.6**	**1.0**	**0.6**	**1.7**	**2.4**	**1.7**	**0.9**
Profit mark-up indicator	0.9	1.1	1.8	1.4	2.4	2.4	3.0	1.3
Unit labour cost	-0.2	-0.5	-0.8	-0.8	-0.7	0.1	-1.3	-0.4
Compensation per employee	2.4	2.8	1.6	3.4	2.4	2.8	2.0	2.6
Labour productivity growth	2.6	3.4	2.5	4.2	3.1	2.8	3.4	3.0
Construction								
GDP deflator (at factor cost)	**3.5**	**4.8**	**4.7**	**4.8**	**4.7**	**5.1**	**4.8**	**4.7**
Profit mark-up indicator	0.9	1.3	1.4	3.4	0.5	0.3	-0.6	-0.3
Unit labour cost	2.5	3.5	3.3	1.3	4.2	4.8	5.4	5.0
Compensation per employee	2.2	3.0	2.5	3.2	3.3	2.6	3.5	3.5
Labour productivity growth	-0.4	-0.5	-0.7	1.9	-0.8	-2.1	-1.8	-1.4
Market services								
GDP deflator (at factor cost)	**1.7**	**2.1**	**1.4**	**1.3**	**1.4**	**1.5**	**1.4**	**1.6**
Profit mark-up indicator	0.3	0.7	0.4	0.2	-0.3	-0.2	-0.3	-0.5
Unit labour cost	1.3	1.4	0.9	1.1	1.7	1.8	1.6	2.1
Compensation per employee	1.9	1.7	1.9	1.8	2.4	2.5	2.1	2.2
Labour productivity growth	0.5	0.3	1.0	0.8	0.6	0.7	0.5	0.0
Non-market services								
GDP deflator (at factor cost)	**2.5**	**2.3**	**2.5**	**2.4**	**1.8**	**1.2**	**1.9**	**2.1**
Profit mark-up indicator	0.1	0.2	0.6	0.0	0.1	0.5	0.0	-0.2
Unit labour cost	2.5	2.1	1.9	2.5	1.7	0.7	1.9	2.3
Compensation per employee	2.4	2.4	1.8	1.8	2.1	1.4	2.2	2.6
Labour productivity growth	-0.1	0.3	-0.1	-0.6	0.4	0.7	0.3	0.3

Sources: Eurostat and ECB calculations.
Note: The profit mark-up indicator is defined as the difference between the rate of growth in the GDP deflator (at factor cost) and in unit labour costs. Labour productivity growth is per person employed. Market services corresponds to the following groupings: trade and repairs, hotels and restaurants, transport and communications, financial intermediation, and real estate, renting and business activities. Non-market services corresponds to public administration, education, health and other services.

Sectoral inflation developments

Aggregate developments in GDP deflator components mask sharp differences across sectors. The strength in overall profit mark-up growth seen since 2004 appears to have stemmed in part from industry excluding construction. In this sector, fast labour productivity growth has allowed for a decline in unit labour costs. Judging from its strong profit growth, the sector seems to have withstood the pressures from both rises in non-labour input costs and heightened global competition. Since 2004 developments in value added inflation components in industry excluding construction stand in sharp contrast with those in services. In the latter sector, the increase in value added inflation (in both market and non-market components) has been driven by the rise in unit labour costs. The key reason for this has been the sector's below-average labour productivity growth, most notably in non-market services. Wage growth added upward pressure in both market and non-market services in 2007.[2] Finally, the construction sector differs from both industry excluding construction and services in that it has exhibited much higher value added inflation. As with industry excluding construction, the construction sector has shown rapid

2 For a more comprehensive analysis of price pressures in the services sector, see the box entitled "Recent developments in euro area services price inflation" in the April 2008 issue of the Monthly Bulletin.

Table B Euro area sectoral data on inflation, competition and productivity, 1996-2005

(annual average percentage changes, unless otherwise specified)

Sector	GDP deflator (at factor cost)	Competition indicators		Productivity growth	
		Profit mark-up (in %) Output/Production costs	Profit margin (in %) Compensation of capital/Output	Labour productivity per hour worked	Total factor productivity
Total economy	**1.9**	**21.5**	**17.5**	**1.1**	**0.2**
Industry excluding construction	0.8	12.2	10.9	2.4	1.2
Agriculture, hunting, forestry and fishing	-0.7	13.6	11.9	3.3	1.8
Construction	3.4	10.8	9.7	-0.1	-0.9
Market services	1.9	36.5	26.7	0.6	-0.2

Sources: EU KLEMS and ECB calculations.
Note: The data exclude Cyprus, Malta and Slovenia. Compensation of capital equals gross value added minus labour compensation, with the latter being derived by applying to compensation the ratio of hours worked by total persons engaged to hours worked by employees.

mark-up growth. Moreover, it shares with services a pattern of generally fast increases in unit labour costs.

Taking a longer-term perspective, comprehensive EU KLEMS data available until 2005 allow one to study the link between value added inflation, labour productivity growth and mark-ups across different sectors of the economy (see Table B).[3] In the period 1996-2005, value added inflation in market services exceeded that in industry excluding construction, in part as a result of lower labour productivity growth and higher mark-ups (suggesting a lower degree of competition). At the same time, the construction sector exhibited high gross value added inflation, poor labour productivity growth and low mark-ups over the last decade.

In sum, the analysis of national accounts indicators shows that, in addition to ongoing rises in profit mark-ups, unit labour cost growth picked up in 2007. The rise in unit labour costs has been driven by the services sector, where higher wage growth was not matched by corresponding improvements in labour productivity. From a longer-term standpoint, both poor productivity growth and above-average mark-ups have been associated with relatively fast value added inflation in market services industries. This suggests that the reduction in the contribution of market services to overall inflation would be facilitated by the adoption of measures intended to foster technological progress and competition in these industries.[4]

3 Compared with standard national accounts data, the EU KLEMS database offers the advantage of reporting labour productivity per hour worked and total factor productivity (as opposed to simply labour productivity per person employed) and allowing for measures of mark-ups that control for total production costs (instead of purely labour costs). See M. Timmer, T. van Moergaestel, E. Stuivenwold, G. Ypma, M. O'Mahony and M. Kangasniemi: EU KLEMS Growth and Productivity Accounts Version 1.0, March 2007. For related computations on mark-ups, see the article entitled "Competition in and economic performance of the euro area services sector" in the May 2007 issue of the Monthly Bulletin; and Task Force of the Monetary Policy Committee of the ESCB: "Competition, productivity and prices in the euro area services sector", ECB Occasional Paper No 44, April 2006.

4 On the need for further structural reforms in the euro area, see R. Gómez-Salvador, A. Musso, M. Stocker and J. Turunen, "Labour productivity developments in the euro area", ECB Occasional Paper No 53, October 2006; the boxes entitled "Developments in euro area productivity and the need for structural reforms", ECB Annual Report 2006, "Sectoral patterns of total factor productivity growth in euro area countries", Monthly Bulletin, October 2007, and "Labour productivity developments in the euro area: results from the latest release of the EU KLEMS database", Monthly Bulletin, January 2008; and the article entitled "Productivity developments and monetary policy" in the January 2008 issue of the Monthly Bulletin.