

Pricing behaviour in the euro area : results of a Eurosystem survey

M. Druant *

Introduction

In 2003, the ECB and the twelve national central banks (NCBs) of the Eurosystem set up a temporary network of researchers to examine both pricing behaviour and the scale and causes of inflation persistence in the euro area. Besides a study based on a wide range of quantitative databases, the Eurosystem Inflation Persistence Network (IPN), considered it useful to collect additional information, essentially of a qualitative nature, by organising ad hoc surveys to examine the pricing behaviour of firms⁽¹⁾. The results of these surveys were analysed in Fabiani et al. (2005); the latter's main findings are briefly summarised in this article.

The surveys are largely based on similar surveys conducted previously in the United States, the United Kingdom and Sweden⁽²⁾. They were organised nationally in nine euro area countries by the NCBs of Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Portugal and Spain and covered more than 11,000 firms (cf. annex for a description of the main characteristics of the surveys in the various countries). Detailed analyses of the national results have been published⁽³⁾ in a number of countries, including Belgium⁽⁴⁾. The number of participants in the national surveys ranged from 333 in Italy to around 2,000 in Belgium and Spain. While results are only available for industry in Germany and France, firms in the trade sector, other services sectors and/or construction also took part in the survey in the other countries. Overall, 62 p.c. of the participating firms operate in industry, 13 p.c. in trade, 21 p.c. in other services sectors and 4 p.c. in construction. Almost half of them are rather small in size, employing between 1 and 49 workers. 29 p.c. have a workforce numbering 50 to 199, and 24 p.c. employ over 200 people.

The IPN aimed at maximising the harmonisation of the surveys by mutual consultation between the national teams. Nonetheless, a number of specific national characteristics and requirements were also taken into account, both in drawing up the questionnaires and at implementation level. All the surveys were conducted during 2003 and 2004, by mail, phone or the internet. France was the only country where interviews were also conducted. In most countries, these surveys were based on existing samples. Only the NCBs of Luxembourg and Spain constructed a sample specifically for their survey.

Although there are variations between the surveys, particularly in the wording and arrangement of the questions, and although the surveys were conducted in a different way and at different phases of the economic cycle, the results display a large number of common characteristics. Moreover, this finding also applies to Belgium's results which, as will be apparent later, diverge slightly from the average for the euro area only for a small number of aspects. That suggests that the national survey results are decidedly robust and therefore shed significant light on the motives behind the pricing behaviour observed. The results analysed below are therefore an essential complement to the more quantitative research conducted on pricing behaviour, on the one hand, and on the scale and causes of inflation persistence on the other.

* The author wishes to thank L. Aucremanne and E. Dhyne for their valuable advice.

(1) Cf. Angeloni et al. (2004) for a description of the various data bases analysed by the IPN and for an interim summary of the results already available.

(2) Cf. Blinder et al. (1998) for the United States, Hall et al. (2000) for the United Kingdom and Apel et al. (2005) for Sweden.

(3) Cf. Fabiani et al. (2004) for Italy, Loupias and Ricart (2004) for France and Kwapił et al. (2005) for Austria.

(4) The results of the Belgian survey were analysed in detail in Aucremanne and Druant (2004 and 2005). The first article provides also a brief explanation of the aims and method of the IPN, whereas the second article gives a more technical analysis of the results.

1. Main results

1.1 Market structure and competition

Over 70 p.c. of industrial firms reply that the domestic market is the main market for their main product. The substantial disparities in regard to the openness of the economies are reflected in the relatively large dispersion of the percentage of participants naming a foreign country as their main market: that figure ranges from 45 p.c. in Belgium to 15 p.c. in Spain. The Belgian, Luxembourg, Portuguese and Spanish surveys also ask firms to state whether the method of pricing varies according to the geographical destination. That proves to be frequently the case, since around 50 p.c. of firms apply a pricing-to-market strategy. That is a very high percentage, given that the bulk of those countries' exports is destined for trading partners in the euro area, where payments are carried out in a common currency. Furthermore, the surveys conducted in Germany, France, Italy, Luxembourg, Portugal

and Spain reveal that other forms of price discrimination are also fairly widespread. On average, for a particular product, 80 p.c. of the participants set prices which may vary according to the customer or the quantity sold.

Sells to other firms account for three-quarters of the turnover, which means that the surveys are primarily assessing producer prices rather than consumer prices. The Belgian percentage (56 p.c.) is well below the euro area average because the trade and construction sectors, which are geared more to the consumer, are heavily represented in the Belgian sample (cf. annex). In view of the dominant position of other firms as the main customers, it is no surprise to find that long-term relationships with customers represent 70 p.c. of turnover.

The level of competition is assessed in various ways in the surveys. The term "perceived competition" is used to designate the indicator which proved to be most closely connected with the pricing method in Fabiani et al (2005). It measures the importance which the participants

TABLE 1 EXTERNAL FACTORS: MARKET STRUCTURE AND COMPETITION
(Percentage)

	AT	BE	DE	ES	FR	IT	LU	NL	PT	Euro area ⁽¹⁾
Main market for main product in industry										
Domestic market	69	55	78	85	64	73	58	72	67	73
Foreign market	31	45	22	15	36	27	42	28	33	27
Main customers										
Other firms	84	56	89	58	66	73	n.	n.	84	75
Consumers	9	40	7	39	30	25	n.	n.	13	21
General government	7	4	4	3	4	2	n.	n.	3	3
Nature of relationship with customers⁽²⁾										
Long-term relationship	81	78	57	86	54	98	85	n.	83	70
Occasional customer	19	22	43	14	46	2	15	n.	17	30
Perceived competition⁽³⁾										
Very weak	20	18	19	27	19	10	15	5	8	17
Weak	18	22	23	19	17	25	17	25	21	21
Strong	30	30	34	24	38	37	37	49	39	35
Very strong	32	30	24	30	25	29	31	22	32	26
Pricing method										
Mark-up	n.	46	73	52	40	42	n.	56	67	54
Fixed	n.	13	4	n.	n.	n.	n.	27	n.	n.
Variable	n.	33	69	n.	n.	n.	n.	30	n.	n.
Competitors' prices	n.	36	17	27	38	32	n.	22	13	27
Other method	n.	18	10	21	22	26	n.	21	21	18

Source: Fabiani et al. (2005).

(1) The euro area average was calculated by weighting the results of the various countries according to their share in the GDP of the euro area.

(2) For BE, FR and IT, this item concerns only relationships with other firms.

(3) Measured by the importance which the participants attach to their competitors' prices when deciding to cut their own prices.

attach to their competitors' prices when deciding to cut their own prices. Here they can choose from the options "unimportant" (competition perceived as very weak), "of minor importance" (competition perceived as weak), "important" (competition perceived as strong) and "very important" (competition perceived as very strong). The majority of firms feel that the competition is strong or even very strong, but a considerable proportion, totalling 38 p.c., operate on a market where competition is weak or very weak.

In principle, the level of competition is in inverse proportion to the firms' ability to apply a mark-up. In the case of perfect competition, the price always corresponds to the marginal costs, and no mark-up is applied. However, the less competitive the market, the more firms set their prices by adding a mark-up on top of the marginal costs. That proves to be the case in over half of firms in the euro area. In the countries where a distinction can be made between a fixed mark-up and a variable mark-up – Belgium, Germany and the Netherlands – it seems that variable mark-ups are the more common. In the case of Belgium, information is available which indicates that mark-up variability is primarily counter-cyclical⁽¹⁾. Moreover, 27 p.c. of participants align their prices with those charged by their competitors, which means that they do not have full control over their profit margins. The remaining 18 p.c. use other methods of pricing, e.g. because their price is fixed by the parent company or the government.

As regards the measurement of perceived competition, the results for Belgium tally with those for the euro area as a whole. However, in the case of the pricing method, it appears that the proportion of firms applying a mark-up (46 p.c.) is slightly below the euro area figure, while the proportion of firms setting their prices by reference to the prices charged by their competitors (36 p.c.) is slightly higher in Belgium. It is therefore evident that Belgian firms do have a degree of market power, although it appears to be slightly less than for the euro area as a whole. The openness of the Belgian economy and its relative specialisation in semi-finished products may explain why the environment in which Belgian firms operate is slightly more competitive.

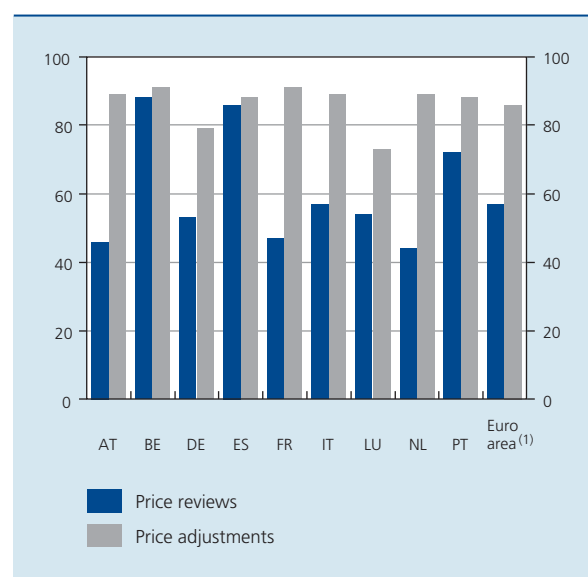
All these findings – the existence of a degree of market power, various forms of price discrimination, and long-term relationships with customers – show that the perfect competition paradigm does not conform to reality. The new-Keynesian literature points out that these differences in relation to perfect competition are essential

if price rigidity is to constitute a (temporary) equilibrium. Price rigidity implies that the aggregate level of prices exhibits a degree of inertia and, under certain conditions, also causes inflation persistence. That is why the surveys pay great attention to the degree of price rigidity and its causes. The results are analysed below.

1.2 When are prices adjusted ?

The results in terms of the frequency of price adjustments indicate a relatively high level of price rigidity. Almost 60 p.c. of the participants review their prices fewer than four times a year, while over 80 p.c. of firms make fewer than four price adjustments annually. It is perfectly logical that prices should be reviewed more frequently than they are adjusted, in view of the specific additional costs associated with price adjustments. Overall, the median European firm only changes its prices once a year. The lowest level of price rigidity is found in trade and the highest level in other services. There are also indications that competition increases price flexibility. Firms perceiving the competition as strong or very strong review and adjust their prices more frequently. While prices are reviewed less frequently in Belgium than in the euro area, the results in terms of actual price adjustments are closer to the euro area average. In Belgium, the median firm also changes its prices once a year.

CHART 1 FIRMS ADJUSTING THEIR PRICES FEWER THAN FOUR TIMES A YEAR
(Percentage)

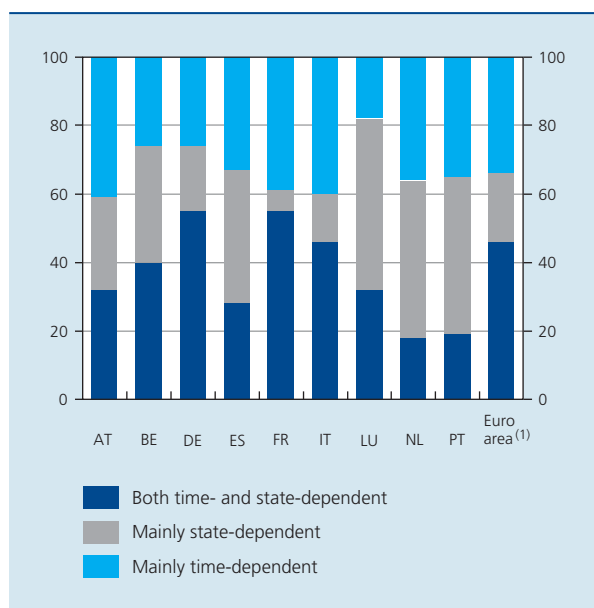


Source : Fabiani et al. (2005).

(1) The euro area average was calculated by weighting the results for the nine countries according to their share in the GDP of the euro area.

(1) Cf. Aucremanne and Druant (2004 and 2005) for an analysis of the importance of counter-cyclical movements in mark-ups as a potential source of price rigidity.

CHART 2 TIME-DEPENDENT OR STATE-DEPENDENT PRICING
(Percentage)



Source : Fabiani et al. (2005).

(1) The euro area average was calculated by weighting the results for the nine countries according to their share in the GDP of the euro area.

However, this relatively low frequency of price adjustments does not mean that firms are totally insensitive to economic shocks, such as changes in demand or costs. Only 34 p.c. of firms review their prices primarily on a time-dependent basis, i.e. they review their prices at regular intervals regardless of changes in economic conditions. On the other hand, the majority of firms display greater flexibility. They respond immediately to (sufficiently) significant shocks – which means that they always review their prices according to the situation (this applies to 20 p.c. of firms) – or switch from a time-dependent to a state-dependent pricing method when prompted by the economic context (46 p.c.). In Belgium, only 26 p.c. of firms apply mainly time-dependent pricing, a figure slightly below the average for the euro area.

The relatively high degree of price rigidity and the fact that the pricing behaviour may be both time-dependent and state-dependent, are in line with the results published by Dhyne et al. (2005). The latter survey presents the IPN conclusions on the quantitative analysis of the pricing of goods and services included in the consumer price index.

Six surveys – conducted in Belgium, Italy, Luxembourg, Austria, Portugal and Spain – ask about the information used in the pricing process, because the less the price decision is geared to the future, the more likely it is to be an additional source of inflation persistence. Half of the firms adopt an optimising strategy, which means that they set their prices on the basis of a complete set of data concerning both in their present and in their expected future operating context. The other half of the participants apply a rule of thumb or base their decision on data which relate to the past or present economic context but offer no indication for the future. In the countries where separate information is available on the use of rules of thumb – namely Belgium, Luxembourg, Portugal and Spain – it emerges that these rules are applied by almost a third of firms. The results of the Belgian survey are slightly different from the average for the six countries. Only 34 p.c. of Belgian firms set prices on the basis of the most complete range of data. On closer examination, this finding proves to be due essentially to the greater weight of the non-industrial sectors in the Belgian survey; in these sectors, the use of rules of thumb and pricing methods which are less geared to the future are more common than in industry.

1.3 Why are prices rigid ?

An important advantage of the surveys is that they allow examining the reasons for rigid pricing. All the questionnaires contain a list of potential factors hampering price adjustments, though the length of the list varies from one country to another. The participants were asked to indicate the importance of each factor for their firm⁽¹⁾. In all countries, the existence of implicit and explicit contracts with the customers is regarded as the main obstacle to price flexibility. This finding tallies with the result previously mentioned concerning the large proportion of turnover (70 p.c.) represented by long-standing customers. The third possible explanation of price rigidity is the flatness of the marginal costs curve, which implies that there is little incentive to adjust prices during the business cycle. Next comes the “kinked demand curve” theory which says that firms are reluctant to be the first to adjust their prices. They prefer to wait for their competitors to take the initiative and then follow suit.

(1) A detailed description of each potential price adjustment obstacle included in table 2 is given in the analysis of the Belgian survey (Aucremmanne and Druant (2004)). This survey in fact tested the longest list of potential explanatory factors.

TABLE 2 RANKING OF POSSIBLE EXPLANATIONS FOR PRICE RIGIDITY
(Average scores)

	AT	BE	DE	ES	FR	IT	LU	NL	PT	Euro area ⁽¹⁾
Implicit contracts	3.0	2.5	n.	2.6	2.2	n.	2.7	2.7	3.1	2.7
Explicit contracts	3.0	2.4	2.4	2.3	2.7	2.6	2.8	2.5	2.6	2.6
Flat marginal costs curve	2.6	2.4	n.	n.	2.5	n.	2.7	n.	2.7	2.6
Kinked demand curve	2.3	2.2	2.2	2.4	3.0	2.6	2.1	2.2	2.8	2.4
Quality judged according to price	1.9	1.9	n.	1.8	n.	n.	2.2	2.4	2.3	2.1
Risk of having to adjust the price subsequently in the opposite direction	1.5	1.8	1.9	1.8	2.1	2.0	1.7	2.4	2.5	2.0
Adjustments to elements other than price	1.7	1.7	n.	1.3	n.	n.	1.9	1.9	n.	1.7
Menu costs	1.5	1.5	1.4	1.4	1.4	1.6	1.8	1.7	1.9	1.6
Information gathering costs	1.6	1.6	n.	1.3	n.	n.	1.8	n.	1.7	1.6
Psychological price thresholds	1.3	1.7	n.	1.5	1.6	1.4	1.8	1.8	1.8	1.6

Source: Fabiani et al. (2005).

(1) Unweighted average of results by country.

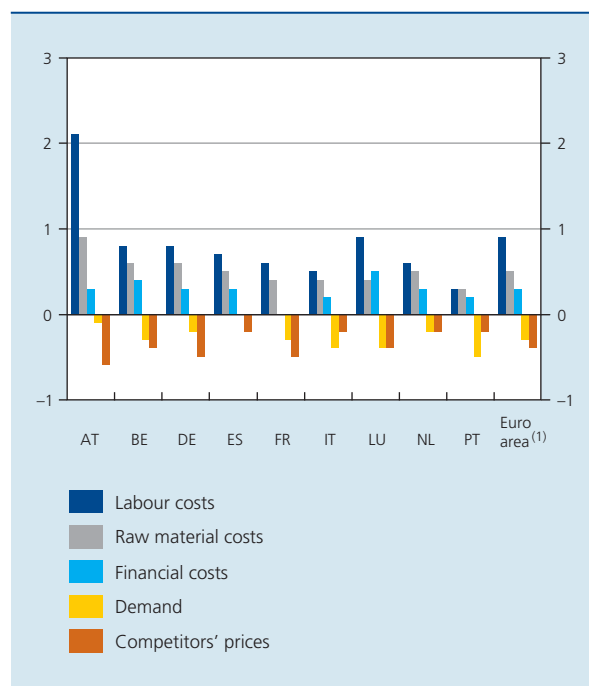
Next, it seems that a price cut may be hampered by its possible association with a reduction in product quality. Another potential factor in price rigidity is, to some extent, the risk of having to adjust the price subsequently in the opposite direction. Moreover, the surveys reveal that some explanations which are frequently put forward in the economic literature play only a minor role in practice. This applies to menu costs – the total of costs linked to price adjustments, by analogy with the necessary adaptations of menu cards in restaurants –, costs linked to the gathering of information relevant to pricing and the use of psychological price thresholds.

1.4 Assymetries in pricing behaviour

The surveys conducted in the various countries consistently show that the importance of the factors prompting a price adjustment differ according to whether the price is being increased or cut. Changes in costs – namely labour costs, cost of raw materials and, to a lesser extent, financial charges – are clearly more important for price increases than for price cuts. On the other hand, changes in market conditions, especially demand fluctuations and the prices charged by competitors, play a greater role in the case of price cuts.

CHART 3 ASYMMETRIES IN THE REASONS
FOR ADJUSTING PRICES

(Difference between the average scores for price rises
and price cuts)



Source: Fabiani et al. (2005).

(1) Unweighted average of the results by country.

The level of competition influences the degree to which firms respond to changes in the underlying factors. Firms operating in a competitive environment respond more strongly to changes in the cost of raw materials and financial charges, and to demand fluctuations. Conversely, the response to changes in labour costs is the same, whatever the perceived level of competition. The reason may be that, in most countries, wage adjustments are agreed by collective bargaining and therefore affect all firms in a particular sector to the same degree.

2. Conclusion

This article presents the results of the surveys on pricing behaviour covering more than 11,000 firms in nine euro area countries. Despite the methodological differences between the surveys, the results are similar in many respects. They are therefore decidedly robust and provide a valuable insight into the reasons behind the pricing behaviour observed, in a way that more quantitative data do not. Moreover, the relatively high degree of price rigidity revealed by the surveys, and the fact that pricing behaviour may be both time-dependent and state-dependent, are in line with the IPN conclusions on the quantitative analysis of the pricing behaviour.

Furthermore, the survey shows that the environment in which European firms operate is significantly different from a perfect competition situation and that, in line with the basic premises of the new-Keynesian literature, firms do have a degree of market power and apply various forms of price discrimination. In addition, it is evident that cost changes are more important for price increases than for price cuts, whereas changes in market conditions have a greater influence in the case of price cuts. The factors explaining price rigidity mainly concern the existence of implicit and explicit contracts, whereas the menu costs and information gathering costs are not regarded as a major obstacles to price adjustments. The flatness of the marginal costs curve and the fact that firms are reluctant to be the first to change their prices are also seen as important impediments to price adjustment.

Bibliography

Angeloni I., L. Aucremanne, M. Ehrmann, J. Gali, A. Levin and F. Smets (2004), *Inflation persistence in the euro area: preliminary summary of findings*, (www.ecb.int).

Apel M., R. Friberg and K. Hallsten (2005), "Microfoundations of macroeconomic price adjustment: survey evidence from Swedish firms", *Journal of Money Credit and Banking*, 37 (2), 313-338.

Aucremanne L. and M. Druant (2004), "Price-setting behaviour in Belgium: what can be learned from an ad hoc survey?", *National Bank of Belgium Economic Review*, 4, 17-48.

Aucremanne L. and M. Druant (2005), *Price-setting behaviour in Belgium: what can be learned from an ad hoc survey?*, National Bank of Belgium Working Paper No. 65 – Research Series, March.

Blinder A.S., E. Canetti, D.E. Lebow and J.B. Rudd (1998), *Asking about prices: a new approach to understanding price stickiness*, New York, Russell Sage Foundation.

Dhyne E., L.J. Alvarez, H. Le Bihan, G. Veronese, D. Dias, J. Hoffman, N. Jonker, P. Lünemann, F. Ruml and J. Vilmunen (2005), *Price setting in the euro area: some stylized facts from individual consumer price data*, ECB Working Paper series, forthcoming.

Fabiani S., A. Gattulli and R. Sabbatini (2004), *The pricing behaviour of Italian firms: new survey evidence on price stickiness*, ECB Working Paper series No. 333, April.

Fabiani S., M. Druant, I. Hernando, C. Kwapil, B. Landau, C. Loupias, F. Martins, T. Mathä, R. Sabbatini, H. Stahl and A. Stokman (2005), *The pricing behaviour of firms in the euro area: new survey evidence*, ECB Working Paper series, forthcoming.

Hall S., M. Walsh and A. Yates (2000), "Are UK companies' prices sticky?", *Oxford Economic Papers*, 52, 425-446.

Kwapil C., J. Baumgartner and J. Scharler (2005), *The price-setting behaviour of Austrian firms: some survey evidence*, ECB Working Paper series No. 464, March.

Loupias C. and R. Ricart (2004), *Price setting in France: new evidence from survey data*, ECB Working Paper series No. 423, December.

Annex: Description of the surveys

	Conduct of the surveys		Sample	Number of firms in the sample / Response rate	Sectors covered ⁽¹⁾ (percentage)	Size class ⁽²⁾ (percentage)	Reference market
	When?	Who and how?					
AT	January-February 2004	external (WIFO) by mail	WIFO's existing business survey sample	2,500 / 36 p.c.	I:76 OS:24	I:53 II:28 III:19	main market
BE	February 2004	National Bank of Belgium by mail	National Bank of Belgium's existing business survey sample	5,600 / 35 p.c.	I:38 T:24 OS:18 CON:20	I:75 II:17 III:8	main market
DE	June-July 2004	external (IFO) by mail	IFO's existing business survey sample	2,740 / 46 p.c.	I:100	I:29 II:35 III:36	domestic market
ES	May-September 2004	external by mail with prior telephone contact	sample constructed by Banco de España	3,000 / 69 p.c.	I:44 T:26 OS:30	I:42 II:23 III:35	main market
FR	December 2003 – February 2004	Banque de France branches, by mail with prior telephone contact, by telephone or interview	Banque de France's existing business survey sample	4,300 / 38 p.c.	I:100	I:18 II:43 III:39	domestic market
IT	February-March 2003	external (Poster s.r.l.) mainly via Internet with prior telephone contact	sample based on existing sample for Banca d'Italia survey of inflation expectations	729 / 46 p.c.	I:65 T:14 OS:20 CON:1	II:39 III:61	main market
LU	August-November 2004	Banque centrale du Luxembourg by mail	sample constructed by Statec	1,100 / 30 p.c.	I:20 T:22 OS:37 CON:22	I:46 II:43 III:11	domestic market
NL	May 2004	external (TNS-NIPO) by Internet	sample based on a panel of business leaders	1,870 / 67 p.c.	I:18 T:22 OS:60	I:81 II:19 ⁽⁴⁾	not specified
PT	May-September 2004	Banco de Portugal by mail	annual accounts data base of Banco de Portugal	2,494 / 55 p.c.	I:84 OS:16	I:39 II:38 III:23	not specified
Euro area ⁽³⁾	–	–	–	–	I:62 T:13 OS:21 CON:4	I:47 II:29 III:24	–

Source: Fabiani et al. (2005).

(1) I: industry; T: trade; OS: other services; CON: construction.

(2) I: 1-49 workers; II: 50-199 workers; III: 200 or more workers.

(3) The euro area average is obtained by calculating the total number of firms per category for the nine countries together.

(4) In the Netherlands it is not possible to distinguish between size classes II and III.