

# STRUCTURAL FEATURES OF THE DISTRIBUTIVE TRADES SECTORS AND THEIR IMPACT ON EURO AREA PRICE DEVELOPMENTS

## ARTICLES

Structural features of the distributive trades sectors and their impact on euro area price developments

*The distributive trades, consisting primarily of the wholesale and retail trades, are key sectors of the economy and are also of significant relevance for monetary policy-makers. They act as the main interface between producers and consumers, and most consumer goods prices are ultimately set in these sectors. The purpose of this article is to consider their structural features, and to understand the extent to which these, together with other indicators, help explain differences in price levels and dynamics in the euro area.*

*The distributive trades sectors vary significantly across both euro area countries and sub-sectors. They have undergone considerable changes, including growing consolidation and internationalisation, and changing retail formats. In particular, the share of the market accounted for by supermarkets and hypermarkets has increased, as has the number of private label brands, while the discount sector has also grown. These developments influence competition and cost structure, and play an important role in determining mark-ups, thereby affecting final consumer prices in the euro area.*

*The main findings of the article are that: (a) structural and regulatory features of the distributive trades sectors help explain differences in price levels across countries; (b) more competition is associated with more frequent price changes in the retail sub-sector; (c) higher market concentration at the regional level is associated with higher growth in food and drink prices in the recent period; and (d) with regard to the magnitude and speed of cost pass-through, producer prices react faster and more strongly to cost shocks than consumer prices, while differences in retail formats also play a role.*

*From a policy perspective, the analysis has highlighted the importance of the need for continued structural reforms, which should enhance competition in the distributive trades. A crucial step towards further progress would be the full implementation of the Services Directive in order to improve the functioning of the Single Market.*

## I INTRODUCTION

The distributive trades, consisting primarily of the wholesale and retail trades, are key sectors of the economy. As the main interface between producers and consumers (around half of private consumption is accounted for by the retail trades), the distributive sectors are not only economically important in their own right, but are also particularly important from a monetary policy point of view. Most consumer goods prices are ultimately set in these sectors. The “value added” of the intermediation service provided by the distributive trades is substantial, accounting for, on average, about 25% of consumer goods prices.

Mark-ups in the distributive trades can be considerable and, despite almost 20 years of the Single Market, still differ significantly across countries, while cross-border trade remains

limited. The objective of this report is to shed light on these aspects by specifically examining (a) the main features of, and issues in, the euro area distributive trades sectors from a monetary policy perspective and (b) the impact of these features on price levels and dynamics.

This article draws extensively from the 2011 Eurosystem Structural Issues Report on “Structural features of distributive trades and their impact on prices in the euro area”.<sup>1</sup> The structure of this article is as follows: Section 2 provides an overview of the distributive trades sectors in the euro area along three main themes – the main features and structural trends, the nature and impact of regulation, and the measurement and assessment of competition. Section 3 considers the impact of structural

<sup>1</sup> European Central Bank (2011), “Structural features of distributive trades and their impact on prices in the euro area”, *Structural Issues Report*.

features of the distributive trades sectors on price levels and price dynamics. Section 4 concludes.

## 2 STRUCTURAL FEATURES OF THE EURO AREA DISTRIBUTIVE TRADES SECTORS

### 2.1 OVERVIEW OF DISTRIBUTIVE TRADES

The distributive trades provide an intermediary service between producers and consumers. While they generally do not produce goods themselves (although this is changing, with the increasing importance of private or own-label brands), they do provide a key economic service. The distributive trades sectors cover three broad areas: the motor, wholesale and retail trades.<sup>2</sup> Wholesale trade companies do not generally sell directly to consumers, but rather to businesses and retailers. Retailers generally sell directly to consumers.

Depending on which measure is considered, the distributive trades account for around a third of the non-financial business sectors (in the case of total turnover, number of firms and self-employment) and around 15-25% of these sectors in terms of other metrics (such as value added and overall employment) (see Chart 1). Although the wholesale trade sub-sector is larger than the retail trade sub-sector by some measures (most notably value added), the focus in this article is on the latter, which is more important in terms of direct employment, owing to its close links to consumers and consumer prices.

#### WHAT ARE THEIR MAIN FEATURES?

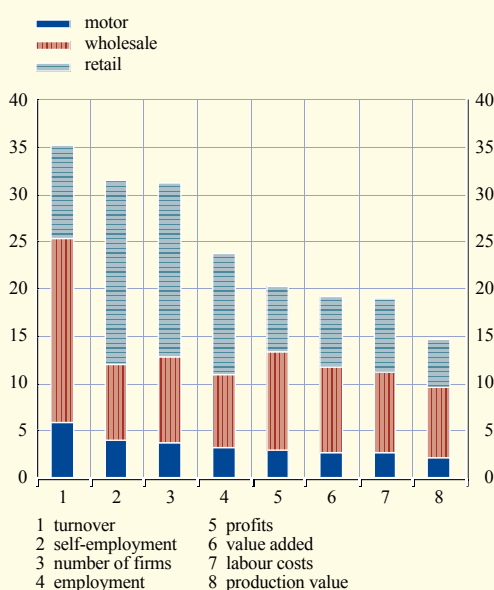
The distributive trades sectors generally, and retail trades in particular, have a number of distinguishing features relative to the rest of the non-financial business sectors. A demographic analysis of the distributive trades sectors in the euro area suggests that they are still highly fragmented (there is a prevalence of micro and small firms), but are slowly moving towards consolidation (the number of larger firms has increased somewhat). They are generally more labour-intensive, with lower-skilled workers on average. Profit margins in both retail and wholesale are below the average of the total economy, but this may reflect more a high degree of turnover (per unit of capital employed) rather than strong competitive pressures. Profit margins are discussed in more detail below in Section 2.3.

In terms of labour market characteristics, the distributive trades sectors differ from the rest of the economy in a number of important ways, with the sectors as a whole – and retailing, in particular – characterised by above-average shares of self-employment, part-time work, females and younger workers (providing just over 40% of total euro area employment for the under-25s).

<sup>2</sup> The motor trades sectors are not considered in this article, as they are viewed as separate sectors with very different characteristics, partly because of the close link between companies in these sectors and the automotive industry.

Chart 1 Share of distributive trades in the non-financial business sector

(2006; percentages)



Sources: Eurostat SBS database and Eurosystem staff calculations.

Relatively low productivity in the distributive trades sectors is a major contributor to the growing aggregate productivity gap between the euro area and the United States. Productivity growth is particularly low in the euro area retail trade (see Box 1 entitled “Labour productivity in the distributive trades: a comparison with the United States”).

## Box 1

## LABOUR PRODUCTIVITY IN THE DISTRIBUTIVE TRADES: A COMPARISON WITH THE UNITED STATES

The sharp divergence in productivity growth between the euro area and the United States since the mid-1990s is a major concern for policy-makers. More recently, it has been suggested that much of the widening differential between the two economies can be traced to poor productivity growth in the service industries in the euro area.<sup>1</sup> This box uses the EU KLEMS database to examine comparative developments in productivity in the euro area and the United States, focusing on developments in the distributive trades.

More than a third of the increasing productivity gap between the United States and the euro area over the period 1995-2007 was attributable to the distributive trades.<sup>2</sup> While rates of productivity growth in the distributive trades declined in both economies between 1995 and 2007, the differential remained large – 2.2 percentage points in the retail sub-sector – roughly three times the average for the whole economy – see the Table. This can be partially attributed to the much stronger growth in retail value added in the United States over this period. Retail productivity in the euro area fell from around 95% of the US level in 1995 to 71% by 2007.

One line of argument put forward to explain the notable US productivity advantage – both at the aggregate level and in the distributive trades – contends that much of the gap could be explained by a better exploitation of new information and communication technologies (ICT) in the United States than that achieved in European economies. The Chart shows the contributions to retail productivity growth from the respective factor inputs of labour, ICT capital and non-ICT capital. That part of productivity growth which cannot be attributed to these factors, but which stems from broader intangible structural differences, technological changes or organisational changes, is captured in the residual component, commonly referred

## Productivity growth

(average annual percentage change; percentage points)

(a) Gross value-added per hour worked: *whole economy*

	EA	US	differential
1995-2001	1.4	2.0	0.6
2001-2007	1.2	1.9	0.8

(b) Gross value-added per hour worked: *distributive trades*

	EA	US	differential
1995-2001	2.0	6.1	4.1
2001-2007	1.0	2.6	1.6

(c) Gross value-added per hour worked: *retail trade*

	EA	US	differential
1995-2001	1.5	4.1	2.7
2001-2007	0.3	2.5	2.2

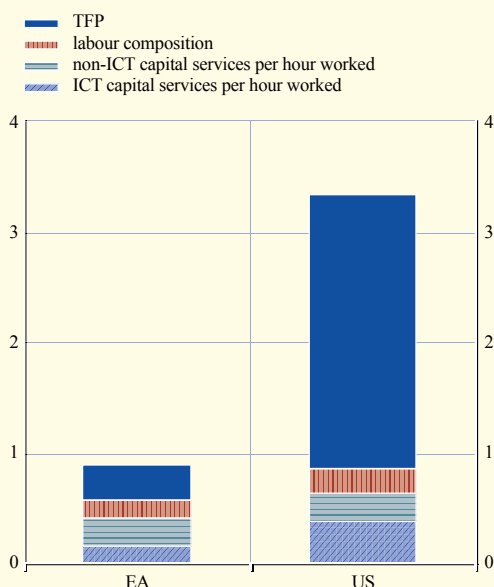
Sources: EU KLEMS (2009) and Eurosystem staff calculations.  
Notes: EA refers to euro area aggregate.

1 See, for example, European Central Bank (2006), “Competition, productivity, and prices in the euro area service sector”, *Occasional Paper Series*, No 44, and Van Ark, B., McGuckin, R. H. and Spiegelman, M. (2005), *The Retail Revolution: Can Europe Match U.S. Productivity Performance?*, Conference Board, March.

2 Following nearly two decades of comparable growth, euro area aggregate productivity growth has slowed progressively since the mid-1990s, averaging only 1.3% per year between 1995 and 2007, compared with roughly 2.0% per year in the United States (see the Table). As a result, aggregate euro area productivity slipped from roughly 90% of the US level to around 83% by 2007.

### Contributions to retail productivity growth: euro area and United States, 1995-2007

(annual average percentage changes: percentage points)



Sources: EU KLEMS (2009) and Eurosystem staff calculations. Note: EA refers to euro area aggregate. TFP denotes total factor productivity. ICT denotes information and communication technology.

regulations constraining the size and density of larger-format stores, restricting the number of certain types of stores in a given location or impeding cross-border expansions. Others contend that labour tends to be less flexible (and more costly) than in the United States.

The sources of the productivity gap between the United States and the euro area retail sectors are many and varied. An earlier adaptation to technological change has undoubtedly played a role, but much more of the gap seems to be attributable to structural and organisational factors. Research on US retailing suggests that much of the strong productivity growth seen in the 1990s was led by new entrants to the industry displacing less efficient incumbent and exiting establishments. Tackling restrictive regulations in the euro area distributive trades – so as to boost competition and enable euro area retailers to operate at the productivity levels of European “best practice” – would assist the pursuit of higher long-run economic growth.

Retail trade is roughly evenly divided into grocery (primarily food and certain household items) and non-grocery (e.g. clothing and footwear, household furnishings, electronic goods, etc.) trade. Most consumers obtain the basic necessities, such as food and household goods for day-to-day living, in the grocery sector. These two sub-sectors differ in terms of their main economic characteristics, with the grocery sector being somewhat more homogeneous than

to as total factor productivity (TFP). The Chart shows that expenditure on ICT capital services was somewhat higher in the United States than in the euro area over the 1995-2007 period. Moreover, some of the full impact of ICT capital may also be embodied in the remaining factors, since ICT investment is often a catalyst for broad-based restructuring (including organisational changes and/or human capital investments).

However, even accepting a broad-based complementarity between the contributions from ICT investments and the other factors, it is unlikely that ICT and its associated spillovers can adequately explain the significantly higher growth of TFP in US retailing. Thus, in recent years, an alternative view has gained ground, which argues that intangible and structural factors may be more important in explaining the US advantage since 1995. It is often argued, for instance, that the euro area regulatory environment is more restrictive (and thus less competitive) in retailing than in the United States – with land zoning

regulations constraining the size and density of larger-format stores, restricting the number of certain types of stores in a given location or impeding cross-border expansions. Others contend that labour tends to be less flexible (and more costly) than in the United States.

the non-grocery sector. This article considers the grocery sector in most detail, owing both to data availability considerations and its relative importance.

#### GROCERY TRADES BY “FORMAT”

The structure of the grocery trade varies considerably across countries, reflecting a combination of historical legacies; societal

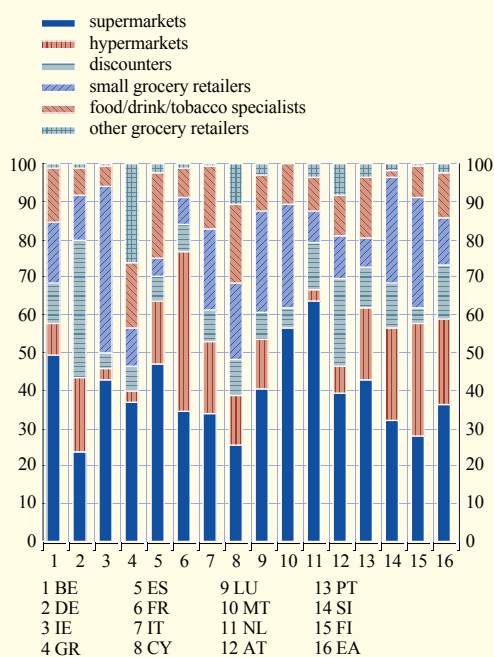
preferences; sociological, economic and geographic factors; and regulatory conditions. Chart 2 reports the distribution of grocery sales by store format across countries. The definition of store formats is, to some extent, arbitrary. Generally, the size (in terms of square metres) and range (in terms of the number and breadth of goods stocked) of a store are used as determining criteria. Hypermarkets tend to be above 2,500 sq. m., supermarkets between 1,000 and 2,500 sq. m., and so-called “discounters” between 400 sq. m. and 1,000 sq. m, stocking a relatively limited range of goods.<sup>3</sup>

On average across the euro area, supermarkets accounted for just over a third of grocery sales in 2009. The share was lowest in Germany (where discounters are dominant – see below) at around 25%, and Cyprus (where smaller, more traditional retailers account for a relatively large proportion). The share of supermarkets was relatively large in the Netherlands and Malta, where hypermarkets account for a relatively small share of the market.<sup>4</sup> On average across the euro area, hypermarkets accounted for approximately a quarter of grocery sales. The share of hypermarkets was largest in France (at over 40%), but was also relatively high in Finland and Slovenia. Discounters – discussed in more detail below – accounted for just under 14% of grocery sales, but the share was much higher in some countries, such as Germany and Austria. More traditional retail formats, such as small grocers and specialist retailers, account for a relatively large proportion of retail sales in Ireland, Greece and Cyprus.

In terms of their evolution over recent years, the shares of supermarkets and hypermarkets have remained broadly unchanged. Overall, the share of discounters has risen, while the share of smaller grocers and specialist retailers (food, drink and tobacco) has fallen. A relatively recent phenomenon not captured in the Chart is the growth of so-called “superettes”. These are small and compact but modern convenience stores. A number of leading supermarket retailers with supermarket and hypermarket chains have

Chart 2 Distribution of grocery sales by store format

(2009; percentages)



Sources: Euromonitor and Eurosystem staff calculations.

started to expand into this segment as a means of extending their coverage of the market.

#### THE GROWTH OF DISCOUNTERS AND PRIVATE LABELS

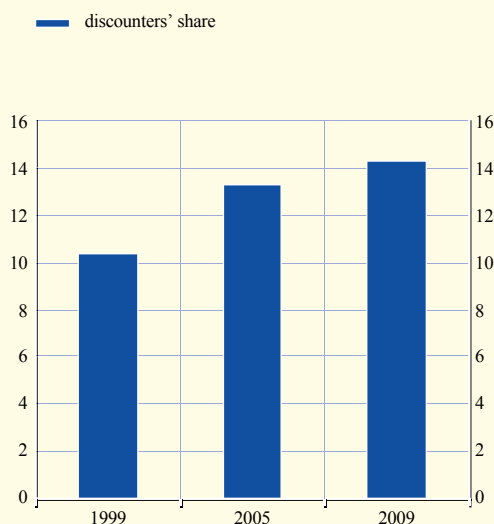
A key development in modern grocery retailing is the emergence of so-called “discounters”. Chart 3 shows that the share of the grocery retail market accounted for by so-called “hard discounters” grew from around 10% in 1999 to nearly 15% in 2009. However, this share varies

3 The term “discounter” is generally used to refer to a retailer that offers a relatively limited number of products, which are frequently own-brand or unbranded, with a relatively small selling area, keeping costs to a minimum and focusing on price competition. Generally, discounters offer a smaller range of goods (e.g. usually less than 1,000 stock-keeping units (SKUs), compared with over 20,000 in a typical large supermarket). So-called “hard discounters” are characterised by a predominance of low-priced, own-label, dry goods, while “soft discounters” stock more brands and fresh food.

4 While the small size of the market may explain this in the case of Malta, it clearly cannot in the Netherlands, where planning restrictions account for the absence of hypermarkets (as noted by the OECD in its economic surveys of the Netherlands).

**Chart 3 Evolution of discounters' market share in euro area**

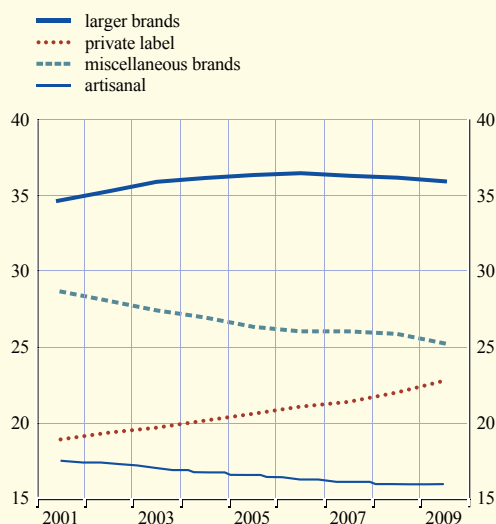
(discounters' share; percentages)



Sources: Euromonitor and Eurosystem staff calculations.

**Chart 4 Evolution of brands**

(market share, percentages)



Sources: Euromonitor and Eurosystem staff calculations.

Notes: Larger brands refer to those with separate market shares reported by Euromonitor; miscellaneous brands refer to those not separately reported by Euromonitor (as they have a market share that is either too small or regional).

substantially across countries – in Germany and Austria, the market share of discounters is above 20%, whereas in Ireland and Finland it is below 5%.

Given that discounters tend to have lower prices (although the lack of comparable brands makes it difficult to compare prices), this increase in market share over time and heterogeneity across countries may have implications for price levels and inflation (both in terms of measurement issues – see Box 2 entitled “Implications of structural developments in the retail trade for inflation measurement” – and in explaining differences across countries).

Partially in response to, but also owing to, the emergence of discounters, another key development in retailing, in particular the grocery trade, over the last two decades has been the emergence of so-called private label (or own-label) brands. These are brands developed and owned (but not necessarily produced) by the retailers themselves. Chart 4 shows that the share of

private label goods has been increasing steadily in the euro area since 2001. However, this has not occurred at the expense of larger brands, which have broadly maintained or even slightly increased their market share. Rather, it is smaller (miscellaneous) brands, as well as artisanal products (e.g. those of traditional bakeries), that have seen their market shares decline. Other things being equal, an increased penetration of private label goods is likely to have a downward impact on price levels.

#### THE EVOLUTION OF ONLINE TRADE

Online retail trade has already transformed many markets (e.g. electronics, e-books, music and travel services) and offers enormous potential for adding to price transparency and competition, thereby increasing economies of scale and choice. The evolution of the online retail trade may foster lower and less diverging prices for equal or comparable products. The EU e-commerce market has reached a considerable size. In 2006 it was estimated to have reached

€106 billion, which was roughly comparable to the e-commerce market in the United States.<sup>5</sup>

However, there has been a widening discrepancy between domestic and cross-border e-commerce. From 2006 to 2008 the share of all EU consumers who have bought at least one item over the internet increased from 27% to 33%, while cross-border e-commerce remains much less important (increasing from 6% to 7%) and only a very small proportion of e-commerce within the EU is conducted across national borders (around 2%-4%).<sup>6</sup> Although the range of possibilities in the field of cross-border e-commerce appears to be enormous, consumers often end up being confined to sites in their country of origin in practice. Frequently, they are redirected to national sites or even refused a sale.<sup>7</sup> Regulatory barriers contribute to the significant market fragmentation at the EU level, with consumer law, electronic waste regulations and postal systems being particularly affected.

### THE ROLE OF BUYING GROUPS

A noteworthy feature of the grocery sector is the role of buying groups.<sup>8</sup> Buying groups are important because, by combining the buying power of their individual members, they can achieve a very large scale and potentially alter the balance of power in negotiations between retailers and suppliers.<sup>9</sup> Their existence also implies that measures of competition based on company-level data may overstate the true level

of competition and understate their bargaining power relative to suppliers (for a more detailed discussion, see Section 2.3 below).<sup>10</sup>

### THE COST STRUCTURES OF THE DISTRIBUTIVE TRADES

Cost structure is of particular importance for a number of reasons. Most notably, it is an important determinant of price setting. The cost of goods sold (COGS) represents the single biggest cost incurred by firms in the distributive trades, accounting for three-quarters and two-thirds of net turnover in the wholesale and retail trades, respectively (see Table 1).

5 Source: European Commission (2009), "Report on cross-border e-commerce in the EU", *Commission Staff Working Document*, SEC(2009) 283.

6 Source: European Commission (2009), *op. cit.*

7 In an EU-wide test of online shops, it was only possible to place an order with an online shop that was not located in the same country as the buyer in 39% of the cases. 61% of all orders failed either because traders refused to serve the consumer's country or for other reasons (technical problems or because a particular payment option was not available). Language barriers may also be an issue, although their importance is not easy to quantify.

8 A buying group is an organisation of retailers that combines the buying power of its individual members to purchase goods on better terms than might be obtained through individual negotiation.

9 For example, the largest buying group in Europe comprises more than ten national supermarket chains, operating across 19 countries, with a combined turnover of approximately €120 billion. To put this into context, the largest European retailer, which is the second largest retailer in the world, has a total global turnover of around €90 billion.

10 It should be noted that buying groups are usually structured in such a way as to avoid competing members. Generally, therefore, no two members of an international buying group come from the same country, and the spheres of operation tend not to overlap too much.

Table 1 Cost structure – distributive trades sectors

(percentages)	Distributive trades	Wholesale trade	Retail trade	Retail (grocery)	Retail (non-grocery)
Turnover/sales (excluding taxes)	100.0	100.0	100.0	100.0	100.0
Costs of goods sold	72.0	73.6	66.7	74.6	62.0
Gross margin	28.0	26.4	33.3	25.4	38.0
Other costs	14.4	14.7	14.8	11.1	17.0
Value added	13.5	11.7	18.5	14.3	21.0
Labour costs – unadjusted	7.8	6.2	11.6	9.7	12.7
- Wages and salaries	6.1	4.8	9.0	7.6	9.9
- Social security contributions	1.7	1.4	2.5	2.1	2.8
Profits – unadjusted	5.8	5.4	6.9	4.6	8.2

Sources: Eurostat SBS database and Eurosystem staff calculations

Note: Labour costs and profits have not been adjusted for the implicit labour income of the self-employed.

Within retailing, notable differences are to be found between the grocery and non-grocery sub-sectors. The 75% COGS share in grocery retailing is considerably higher than for most other retail sub-sectors (with the exception of the electronics and appliances sub-sector). The higher COGS share for the grocery, and electronics and appliances retail sub-sectors most likely reflects the more internationalised, efficient and concentrated nature of these sub-sectors (see Section 2.3 on concentration and competition), which helps drive down costs (including unit labour costs). The COGS share is noticeably low for clothing and footwear at around 55%.

The share of value added accounts for 18.5% of retail trade turnover. Within the retail trade, it is highest in the clothing and footwear sector, at 23.6% of turnover. Some variation in *profit margins* across the distributive trades sectors is evident, ranging from 5.4% in wholesale to 8.2% in non-grocery retail. It should, however, be noted that an analysis of the profitability of the grocery sector based solely on profit margin can prove somewhat misleading, as the sector's characteristically high turnover (per unit of capital employed) needs to be taken into consideration. In this instance, the rate of return on capital may provide a more informative measure of profitability.<sup>11</sup>

## 2.2 REGULATION AND DISTRIBUTIVE TRADES

In the distributive trades sectors, many areas of activity are subject to specific regulations, especially in the retail sector, with notable cross-country differences, and in some cases even between regions and municipalities in the same country. Regulation covers issues as diverse as the set-up of establishments, contractual relationships with suppliers, use of inputs, opening hours, price controls, promotions, sales conditions, after sales, and waste and recycling.

Planning rules in particular are often found to play an important role in creating barriers to entry or expansion and therefore in constraining competition by impeding the emergence of

competitors – especially large ones – able to challenge existing retailers. General planning provisions, building permits and a specific prior authorisation to establish retail outlets are found in the majority of the euro area countries.<sup>12</sup> In this respect, the European Commission (2010) has pointed out that current fragmented national, regional and local commercial planning frameworks, in conjunction with different rules on property and land ownership, are factors likely to dissuade entrepreneurs/firms from entering certain markets.<sup>13</sup>

Regulations may also have unintended consequences. For instance, some commentators (see, for example, McKinsey and Company (2005)) have argued that the strong growth in the market share of discounters is due to the fact that their business model (i.e. a small store size with a limited range) has allowed them to expand where store threshold limits prevented the opening of larger-store formats such as supermarkets and hypermarkets.<sup>14</sup>

The Product Market Regulation (PMR) indicators calculated by the OECD, which measure the regulatory burden for the retail trade sector, give an idea of the degree of regulation in each country. These indicators, which cover areas such as shop opening hours, licences, regulations of large outlets, and price controls, have the advantage of being internationally comparable. The most recent figures refer to 2008, but these have been updated up to 2010 – see Chart 5 – using information provided by the Eurosystem NCBs. The results of these indicators need to be interpreted carefully, especially comparisons at a very detailed level. In addition, for some criteria, the indicator only takes into account

11 Adjusting for the implicit labour income of the self-employed also impacts on apparent profit margins across sub-sectors, reducing apparent differences.

12 Specific prior authorisation to establish retail outlets is not required in the Netherlands, Slovenia and Slovakia.

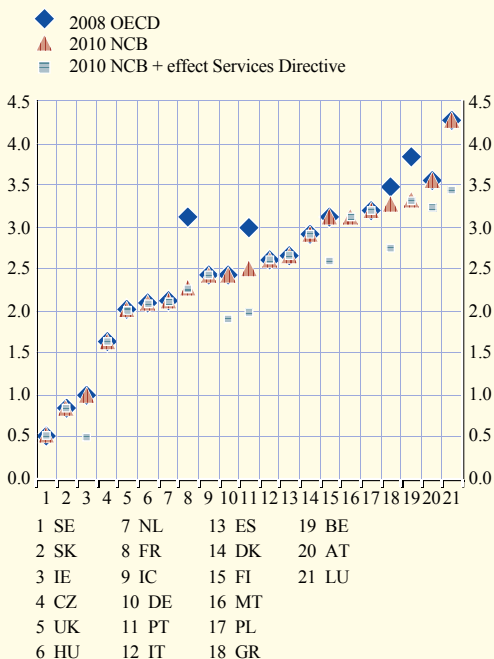
13 European Commission (2010), "On Retail Services in the Internal Market", *Comission staff working document*, Brussels.

14 McKinsey and Company (2005) "Responding to Discount: A new business model for food retailers?", (A study conducted for the Coca-Cola Retailing Research Council Europe), Project XI, August.



Chart 5 Retail sector regulation indicators  
(PMR from the OECD updated for 2010)

(range 0–6, from less regulated to more regulated)



Sources: OECD and Eurosystem staff calculations.  
Note: 2008 refers to OECD data. 2010 NCB refers to data provided by NCBs. 2010 NCB + effects Services Directive refers to the previous indicator plus the impact of the Services Directive, if not yet reflected in the indicator.

the country-level regulation, although it may be different at the regional level.

Nonetheless, it appears that there is an important dispersion in the results for the different countries, which reflects the variety of the existing regulations. The tendency towards less regulation which has been observed in the past is once again confirmed in 2010: in all the countries in which changes in legislation have been recorded since 2008, the score is lower in 2010 (i.e. France, Portugal, Belgium and Greece). This can probably be partly attributed to the implementation of the Services Directive.<sup>15</sup> However, as shown in Chart 5, the expected impact of the Services Directive is not yet reflected in the indicators in many countries.

## 2.3 MEASURING AND ASSESSING COMPETITION IN THE DISTRIBUTIVE TRADES SECTORS

This section reviews alternative indicators of the degree of competition in the distributive trades sectors. Measuring the degree of competition in any market is challenging in practice. However, it may be especially difficult to do so for the distributive trades sectors, with their considerable heterogeneity across sub-sectors and countries, as well as their role as intermediaries between, and their complex interaction with, suppliers and customers.

With regard to the question of which measure of competition is best, two broad measures of competition are considered, based on (i) concentration and (ii) profitability. *Concentration measures* may be thought of as ex ante indicators of potential competition. *Profitability measures* may be considered as ex post indicators of competition, as they are the outcome of decisions made by competing firms. In principle, profitability in a highly competitive market should be driven down to a common minimum acceptable level. In practice, however, measuring profitability is challenging, and the more easily calculated measures have limitations and need to be interpreted with caution.

The degree of concentration varies substantially across retail sub-sectors. On average across the euro area, the most concentrated sectors tend to be the electronics and appliances, and grocery sub-sectors. There was a slight upward drift in concentration observed across all the sub-sectors over the period 2004–2009.

In the grocery sector, a general finding is that concentration at the national level is relatively low in the Southern European countries, owing to the persistence of a more traditional retail

<sup>15</sup> The Services Directive is an EU directive aimed at creating a single market for services by removing legal and administrative barriers to trade in services.

structure. However, using a unique dataset on the location of over 100,000 individual grocery stores across the euro area, regional and local measures of competition are also constructed. While there are some similarities with the results using national data, there are also some notable differences, with some markets appearing to be relatively fragmented at the national level, but turning out to be quite concentrated at the local level and vice versa. In summary, measuring the degree of competition in the retail trades is not straightforward and should be carefully considered along a number of different dimensions.

With regard to profit margins as indicators of competition, even though they, too, are not without their limitations, profitability-based measures may reflect actual competition better than concentration measures, as the degree of concentration can have positive or negative consequences depending on whether the negative competitive or positive efficiency effects of higher concentration dominate. On an unadjusted (for the imputed labour income of the self-

employed) basis, profit margins are highest in the retail sector (6.9%), especially the non-grocery retail sector (8.2%), and lowest in the grocery sector (4.6%). Although the pattern is not as clear as was the case with the concentration measures, some of the Southern European countries (most noticeably Greece, Spain and Italy) tend to have relatively high margins. However, this is partially accounted for by the high share of self-employed in these countries, as the relative rankings improve (i.e. their profit margins become relatively lower) when margins are adjusted for the implicit labour income of the self-employment. Thus, while there is a significant degree of variation in margins across countries, this is reduced considerably when adjusted profit margins are considered.

Cross-checking the concentration and profitability measures suggests that there is generally a positive correlation between concentration and profitability across countries (i.e. higher concentration is associated with higher profitability) for both grocery and overall non-grocery retail.

## Box 2

### IMPLICATIONS OF STRUCTURAL DEVELOPMENTS IN THE RETAIL TRADE FOR INFLATION MEASUREMENT

Some of the structural trends outlined above (such as the increasing share of discounters, the growth of online trade and the emergence of private label products) have possible implications for inflation measurement. This box explains how structural developments in the retail trade are treated in the HICP and discusses the potential implications for inflation measurement, drawing on the empirical evidence of previous studies.

Structural changes in the variety and market shares of retail outlets over time can pose two distinct issues for inflation measurement. Firstly, such changes can mean that, after a while, the sample of outlets used for compiling the consumer price index is no longer representative. Measurement errors may then occur if price changes vary across the outlet types or if there are significant changes in the market shares of different outlet types. Such errors do not necessarily go in a particular direction. A second distinct issue is the method by which new outlets with a different average price level from the previous outlets are introduced into the sample. How such price level differences should be reflected in the HICP depends, in principle, on the extent to which the lower prices are due to the seller having a lower level of retail services (less convenient location, more basic presentation of goods, less brand selection, etc.). In practice, statistical offices generally use a linking technique, which attributes the whole of the price difference to

differences in the quality of retail services. The new lower prices therefore have no impact on the level of the index. The likelihood that this is an over-adjustment suggests an upward bias (which affects not only the euro area HICP, but almost all CPIs across the world).

### Treatment in the HICP and implications for inflation measurement

In constructing their HICPs, national statistical offices select a sample of products and outlets which aims to be representative of all transactions (and therefore across all outlets) within the scope of the index. There is no specific regulation regarding the frequency of updating samples, but eight euro area countries, accounting for around 49% of the euro area HICP, currently update their outlet samples on an annual or continuous basis, with most of the remaining countries updating them once every five years. Only four euro area countries widely cover internet retailers in their HICP samples for goods. In some cases, internet retailers are included, but only for a very limited number of products (e.g. PCs and books).

When an outlet goes out of business or is no longer representative, it is replaced by an alternative outlet via a linking procedure. Whether this approach is appropriate depends on the value consumers attach to the difference in the quality of the retail services provided by the two stores. The assumption inherent in linking is that the price level differences at the time of linking are equal to the consumer valuation of these differences in the quality of the retail services. In reality, the clear trends in the market shares of certain types of outlet and consistent patterns of price differentials across outlet types would suggest that, even after allowing for differences in the retail services offered, many consumers consider the prices to be better value. The practice of linking would therefore impart an upward bias to the HICP inflation rate.

### Evidence of price level differences across outlet types and empirical evidence of the impact of new outlet bias on inflation measurement

A number of studies for the US and European markets have shown that price level differences are typical, especially between discounters and traditional types of store. Based on US data, Leibtag et al. (2010) compare identical items (at the universal product code (UPC) level), showing an expenditure-weighted average price discount of 7.5%, with differences ranging from 3% to 28% lower in non-traditional stores than traditional stores.<sup>1</sup> In Europe, Nielsen (2007) reports that prices in the largest two discount groups were between 30% and 40% lower than average across a range of categories. However, these differences can vary substantially across product types.<sup>2</sup>

With regard to the impact structural changes and price differences have on measured inflation, most of the empirical evidence for the size of the new outlet bias is based on US CPI data.<sup>3</sup>

1 Leibtag, E., Barker, C. and Dutko, P. (2010), "How Much Lower Are Prices at Discount Stores? An Examination of Retail Food Prices", *Economic Research Report*, United States Department of Agriculture, No 105, October.

2 Nielsen (2007), "The Hard Discounter Report: An Overview of Aldi and Lidl in Europe", *Consumer Insight Report*, June.

3 Reinsdorf (1993) found an upward bias of 0.25 percentage point per year in the US CPI for food at home and petrol. Lebow et al. (1994) extrapolated these results to come to an estimate for the overall US CPI of 0.1 percentage point per year. More recently, Hausman and Leibtag (2004) modelled the direct impact of the growth of discounters in the US market and the indirect effects of the more traditional retailers through price competition, estimating a bias of 0.32-0.42 percentage point in the food component of the US CPI. See Reinsdorf, M. (1993), "The Effect of Outlet Price Differentials on the US Consumer Price Index" in Foss, M., Manser, M. and Young, A. (eds.), *Price Measurements and Their Uses*, University of Chicago Press; Lebow, D. E., Roberts, J. M. and Stockton, D. J. (1994), "Monetary Policy and The Price Level", (Unpublished paper by the Board of Governors of the Federal Reserve System), July; and Hausman, J. and Leibtag, E. (2004), "CPI Bias from Supercenters: Does the BLS Know that Wal-Mart Exists?", *NBER Working Paper*, No 10712, August.

Evidence for euro area countries is more scarce and generally refers to national CPIs during the late 1990s: for France, Lequiller (1997) suggests a range of 0.05-0.15 percentage point per annum; for Germany, Hoffmann (1998) arrived at an estimate “unlikely to exceed 0.1 percentage point annually”; and, for Portugal, Covas and Silva (1999) used microdata to conclude that, during a period of rapid change in the Portuguese grocery sector in the early 1990s, the new outlet bias reached 0.5 percentage point per annum, but that this had decreased to 0.25 percentage point per annum by the end of the 1990s.<sup>4</sup> No quantitative studies on bias in the euro area HICP have been conducted to date, largely as a result of the large data requirements and the fact that practices at the detailed level of index construction are heterogeneous across the euro area.

### Alternative approaches to dealing with changes in the retail structure

In general, the regular updating of HICP outlet samples seems to be appropriate, although there is a danger that structural changes mean that samples become unrepresentative in countries which update them only once every five years or less. The limited coverage of internet retailing in many national HICPs is a symptom of this. With regard to the new outlet bias, a satisfactory approach would require an explicit valuation of various facets of retail services, similar to that of quality adjustments for product characteristics. Hedonic approaches which regress price information on a range of retail service characteristics may be one avenue that warrants further research. Alternatively, consideration may be given to conducting consumer surveys in order to obtain direct valuations of different aspects of retail services. While both approaches may appear resource-intensive, it may also be considered that structural changes in the retail trade sector are relatively gradual and that innovations are much less frequent or varied than in product characteristics. Therefore, such research and, in particular, explicit valuations might be estimated infrequently, but applied in the regular monthly compilation of the HICP.

Although evidence from the 1990s suggests that new outlet bias was not a source of a very significant bias, recent developments in the market shares of discounters and online retailers suggest that the challenges these structural developments pose for inflation measurement should remain a concern for policy-makers and a topic worthy of further research.

4 Lequiller, F. (1997), “Does the French Consumer Price Index Overstate Inflation?”, *Institut National de la Statistique et des Études Économiques (INSEE) Série des documents de travail de la Direction des Etudes et Synthèses Économiques*; Hoffmann, J. (1998), “Problems of Inflation Measurement in Germany”, *Discussion Paper*, Economic Research Group of the Deutsche Bundesbank, Vol. 1, No 98; and Covas, F. and Santos Silva, J. (1999), “Outlet substitution bias”, *Economic Bulletin*, Banco de Portugal, September.

## 3 THE IMPACT OF STRUCTURAL FEATURES ON EURO AREA PRICE DEVELOPMENTS

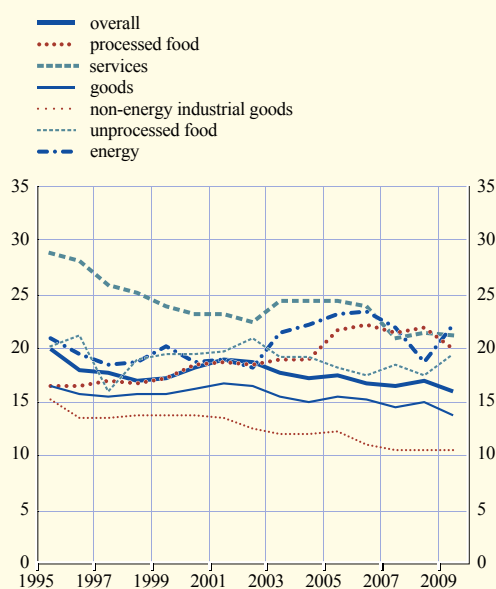
### 3.1 THE IMPACT OF STRUCTURAL FEATURES ON PRICE LEVEL DIFFERENCES ACROSS THE EURO AREA

This section provides a descriptive overview of the degree of price level dispersion across the euro area in terms of magnitude and characteristics across products. It examines the degree of convergence in price levels. Lastly, information on structural aspects of the retail sector is combined with other indicators

to assess the extent to which these structural aspects help understand price level differences and convergence.

Although there is a considerable degree of volatility within and across individual product price series over time and a substantial amount of heterogeneity at the individual product category level, a number of patterns regarding the degree of price dispersion become evident when the data are aggregated. Chart 6 shows price dispersion as measured by the coefficient of variation and reveals that it was, on average over the sample period (1995-2009), lower

**Chart 6 Evolution of the coefficient of variation across HICP special aggregate categories**



Source: Eurostat Purchasing Power Parity (PPP) dataset and Eurosystem staff calculations.

for goods (slightly below 15 in 2009) than for services (slightly above 20 in 2009). It should be noted that, although goods, unlike services, are generally internationally traded, goods prices may also include a substantial non-traded element, particularly in the form of retail intermediation services. For overall consumer prices, and in particular for non-energy industrial goods and for services, the degree of dispersion has been falling on average over the past 15 years. Considering the profile over time more broadly, the overall degree of price dispersion seemed to decline slightly between 1995 and 1998, and increase somewhat between 1998 and 2001, before easing thereafter to reach a minimum in 2009. However, it should be noted that, with a rising price level, the coefficient of variation may overstate the degree of price convergence. In this regard, the standard deviation of prices, which takes into account price levels, declined up to the mid-2000s, but rose somewhat thereafter.

Considering even more detailed product-level data from the purchasing power parity (PPP)

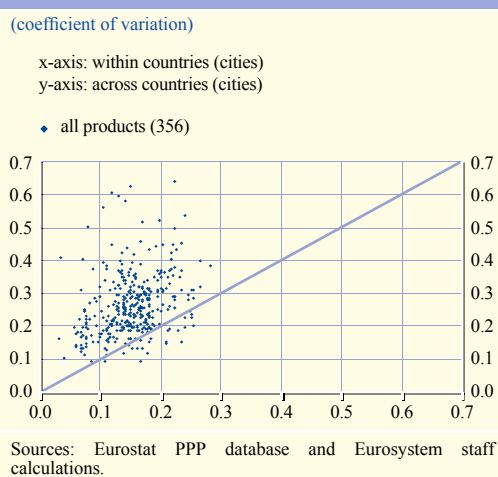
dataset, the extent to which prices differ more within or across countries (the so-called “border effect”) can be analysed. The border effect refers to the fact that price dispersion tends to be higher between cities across borders than between cities within borders. While there has been extensive and rich literature on this topic (see, for example, Bergin and Glick (2006), and Parsley and Wei (2001))<sup>16</sup>, this effect has not been studied across euro area countries using PPP data before.<sup>17</sup> These data make it possible to ascertain whether prices vary more across countries than within countries. Although there are some caveats to using these data, the findings are quite robust even with these caveats in mind, as shown below.<sup>18</sup> Chart 7 shows the median dispersion of individual price observations within countries, as well as the dispersion in average prices across countries for 356 food and non-alcoholic beverage products. On average, the degree of dispersion in average prices across countries is considerably higher than the degree of dispersion in individual observations within countries (medians of 0.25 and 0.15, respectively). Also, the spread across products in dispersion is higher (the inter-quartile range across countries is 0.12, compared with 0.06 within countries). The evidence shown

16 Bergin, P. R. and Glick, R. (2006), “Global Price Dispersion: Are Prices Converging or Diverging?”, (Paper prepared for the Journal of International Money and Finance – Santa Cruz Center for International Economics Conference on “Financial and Commercial Integrations”), September 29-30. Parsley, D. C. and Wei, S.-J. (2001), “Explaining the Border Effect: The Role of Exchange Rate Variability, Shipping Costs, and Geography”, *Journal of International Economics*, Vol. 55, No 1, pp. 87–105.

17 It is possible to assess the existence of a border effect using data from the so-called “Quaranta tables” compiled at the product level (over 2,500 items). For each individual product in each country, the Quaranta tables contain information on the average price recorded, the number of price observations recorded and the coefficient of variation of the prices recorded.

18 The main caveat is that it is not possible to extract the coefficient of variation of all observations across all countries; only (a) the coefficient of variation of the individual observations recorded within a country and (b) the coefficient of variation of the average prices observed across countries can be observed. However, a priori, one would expect the coefficient of variation of a sample average (i.e. the average prices observed) to be lower than the coefficient of variation of the raw data (the individual price observations). Therefore, if the coefficient of variation across countries is higher than that within countries, it strongly suggests the presence of a border effect.

**Chart 7 Degree of dispersion of food, beverage and tobacco prices**



represents compelling evidence of the existence of a border effect. Nonetheless, it could be argued that this effect also captures the impact of geographical distance rather than just the impact of national borders. However, further analysis shows that it is indeed a border effect (for further details, see Section 2.1 of the 2011 Structural Issues Report).

Having documented the considerable and persistent price dispersion and strong border effects in the euro area, it may be informative to consider the factors that may be behind these features and the role played by structural aspects of the distributive trades sectors. Table 2 descriptively summarises the results of a panel regression pooling price level data across both products and countries, and including fixed effects (for products and countries). It should be noted that, in addition to explicitly considering the role of structural factors, the analysis controlled for other factors that may impact on price levels across countries. In this regard, the existing (benchmark) literature models price level differences across countries as a function of (i) income differentials, (ii) VAT differences, (iii) expenditure intensity, and (iv) population density and scale effects.<sup>19</sup>

**Table 2 Summary of econometric analysis of factors impacting on cross-country price levels**

Benchmark variables	
Income levels	+ive
VAT	+ive
Expenditure intensity	-ive
Population density	-ive
Structural variables	
Concentration (HHI)	-ive
Concentration (CR5)	+ive
Profitability	+ive
PMR (barriers to entry)	+ive
PMR (price controls)	-ive
PMR (operating restrictions)	n.s.
EPL	-ive

Notes: PMR denotes OECD product market regulation indicator; EPL denotes OECD employment protection legislation indicator; +ive ⇒ positive and statistically significant coefficient; -ive ⇒ negative and statistically significant coefficient; n.s. denotes not statistically significant.

The results in Table 2 show that the impacts of both the benchmark and structural variables are very much in line with the a priori expectations. Relative income levels and VAT rates have a positive and significant impact on relative price levels. Expenditure intensity has a negative and significant impact on price levels, suggesting that either greater attention or scale effects have an impact on price levels. Population density also has a negative and significant impact on price levels.

To capture the impact of structural features of the distributive trades sectors, three broad categories of variables were used, capturing

<sup>19</sup> By far the most common element in this literature is the hypothesised link between price levels and living standards, usually motivated by the Balassa-Samuelson type of argument. Therefore, relative real gross domestic product (GDP) per capita is included in the benchmark model. Secondly, although there has been some degree of harmonisation of indirect taxes in the EU, there are still differences across countries. VAT rates are therefore included in the benchmark model. Thirdly, drawing on the “rational inattention” literature, the relative share of expenditure on a specific product in a country, relative to the euro area average, is added to capture the expenditure intensity and, presumably, “attention intensity” for each product. For example, if Italian households consume proportionally more pasta than households in other countries, they will presumably invest more effort in searching for and comparing prices of pasta products. Thus, other things being equal (and maybe being helped by scale and competition effects), prices of pasta should be lower in Italy. Finally, population density is included as a control for potential efficiencies driven by high versus low population density.

(a) market concentration, (b) profitability, and (c) regulation. Considering first the market concentration measures, a general finding was that the Herfindahl–Hirschman Index (HHI) indicator impacted negatively on relative price levels (suggesting that the HHI captures the inefficiency effect stemming from low concentration), whereas the k-firm concentration ratio (CRk) indicator impacted positively on price levels (suggesting that this indicator therefore captures the adverse competitive impact stemming from the market power of the largest k-firms). The profitability indicator (profit margins adjusted for the implicit labour income for the self-employed) impacted positively and significantly. Lastly, with respect to the OECD product market regulation indicators for the distributive trades sectors, the different components of the overall indicator (barriers to entry, operating restrictions and price controls) appear to have quite different effects, with the former having a positive effect, but the latter and the employment protection legislation indicator a negative effect, while operating restrictions were insignificant.

In summary, while a model with relative income levels, VAT rates, expenditure intensity and population density performs relatively well when explaining price level differences, augmenting it with structural indicators of the distributive trades sectors improves its performance. This analysis confirms that structural features of the distributive trades sectors may impact on price levels and explain some of the divergence across countries and the “border effect” observed in the price data.

### 3.2 THE IMPACT OF STRUCTURAL FEATURES ON PRICE-SETTING BEHAVIOUR

Having considered the impact of structural features of the distributive trades sectors on price level differences, their impact on price and wage-setting behaviour more generally is now considered, namely in terms of the responsiveness of retailers’ prices to changes in competitors’ prices, the frequency of price changes and the pass-through of cost changes into prices.

### RESPONSIVENESS TO COMPETITORS’ PRICES AND THE FREQUENCY OF PRICE CHANGES

To address the issue of how structural features of the distributive trades sectors impact on price-setting behaviour, evidence from the Eurosystem Wage Dynamics Network (WDN) and the Inflation Persistence Network (IPN) is reviewed.<sup>20</sup>

One important question is whether retail firms faced with competition tend to change their prices more frequently. In the WDN survey, around 1,000 retail firms responded to the following question: “*Suppose that the main competitor for your firm’s main product decreases its prices; how likely is your firm to react by decreasing its own price? Please choose a single option. (Very likely, Likely, Not likely, Not at all, It doesn’t apply)*”. More than half of the retail firms state that it would be very likely or likely that they would reduce their price. More interestingly, when cross-checked against structural features facing firms, the degree of competition reported has a statistically significant effect on the reported frequency of price changes, i.e. more competition leads to more frequent price adjustment. In addition, larger retail firms, measured by the number of employees, have a higher reported frequency of price changes.

The results from the IPN show that outlet types have a significant influence on the frequency of price changes, controlling for country and type-of-good effects. Hypermarkets have, on average, a frequency of price change that is 12 percentage points higher than traditional corner shops. For supermarkets and discount stores, these are, respectively, 6.3 and 6.8 percentage points higher than traditional shops. Lastly, while the type of outlet has a strong and significant impact on the frequency of price changes, the results

20 For a more detailed overview of the WDN and IPN, see European Central Bank (2009), “Wage dynamics in Europe: Final report of the Wage Dynamics Network (WDN)”, December, and Altissimo, F., Ehrmann, M. and Smets, F. (2010), “Inflation persistence and price-setting behaviour in the euro area – a summary of the IPN evidence”, *Occasional Paper Series*, No 46, ECB, June.

suggest that it does not have an effect on the magnitude of price changes. Other things being equal, more flexible prices should mean that prices adjust more quickly and completely to changes in the “optimal” price.

### THE IMPACT OF MARKET CONCENTRATION AND PRICE DYNAMICS: A REGIONAL LEVEL ANALYSIS

The aim of this section is to combine information on concentration across different dimensions of the grocery sector with disaggregated regional data on price dynamics. This represents an initial attempt to analyse the impact of competition on price dynamics across the euro area at a local level. Using a unique dataset on the location of over 100,000 individual grocery stores across the euro area, a regional analysis of the relationship between the degree of retail market concentration and price changes is conducted for two categories of grocery goods (food and non-alcoholic beverages; and alcoholic beverages and tobacco) in Germany, Spain, Italy, Austria, Portugal and Finland.<sup>21</sup>

When considering the HHI at the buying group level, a positive and statistically significant relationship between concentration and price dynamics was found for both food and beverages and for alcohol and tobacco. The interpretation of these findings is that a higher degree of market concentration at the buying group level does not always seem to have been associated with negative price dynamics.

When considering the results based on concentration indices computed at the local level, broadly similar results are obtained. Thus, the main finding, i.e. that higher market concentration is associated with higher price growth in food and drink products in the recent period, holds for different levels of aggregation. The interpretation of this correlation calls for further research, but it appears to be robust and to hold across individual countries.

In summary, it can be shown – using a unique database containing both regional year-on-year percentage price changes and concentration

measures – that these price changes are positively affected by the degree of concentration (for further details, see Section 2.3 of the 2011 Structural Issues Report).

### THE IMPACT OF STRUCTURAL FEATURES ON COST PASS-THROUGH

Structural features of the distributive trades may also impact on the pass-through of costs to domestic prices (consumer and producer). To investigate this, the pass-through of import and producer prices to consumer non-energy industrial goods prices in euro area countries was analysed.<sup>22</sup> A general finding was that price changes for domestic goods (PPI) tend to be of higher importance for prices of manufactured consumer goods in the larger euro area countries, reflecting significant domestic production, while import price changes (UVI) are more relevant for consumer prices in smaller, more “open” euro area countries where imports play a greater role. In the case of these smaller, more “open” euro area countries, there seems to be a link to the fact that the level of imports in retail sales is likely to be higher, as well as the fact that the level of production in these countries is relatively low.

When focusing solely on the pass-through of import prices, there is some evidence that the magnitude of the estimated pass-through is related to the degree of competition/concentration in the specific country and sector, as a negative – albeit weak – relationship between the estimated import price elasticity and the HHI was found, suggesting that the stronger the competition (the lower the HHI index), the higher the elasticity of consumer prices seems to be with respect to import price changes.

21 Regional CPI data were not available for the other euro area countries.

22 It should be noted that, owing to different costs, the complete pass-through of a given cost change to retail prices does not entail a one-to-one relationship between the percentage change in costs and the percentage change in prices. Other things being equal, the higher the proportion of the final selling price that is accounted for by the cost, the higher the pass-through coefficient will be. Therefore, the pass-through coefficient (the elasticity of the selling price with respect to a specific cost factor) may be less than unity even when pass-through is complete.



Part of the difficulty in finding robust and meaningful pass-through estimates for the different non-energy industrial goods components may stem from the heterogeneity of products considered and the wide range of production technologies and market structures across the different product groupings. In this regard, a VAR analysis of food price pass-through using detailed information on farm-gate, producer and consumer prices yields more meaningful and consistent results. In particular, the analysis shows that consumer prices tend to respond less than producer prices to commodity shocks. It is also found that the size of the shocks varies across markets and countries. This feature is partially reflected in cross-sectional differences between retailers and producers in terms of composition and types. A more pronounced presence of discounters seems more likely to be associated with a higher pass-through and, conversely, markets characterised by shops with a smaller format seem to respond less to commodity price shocks.

#### 4 CONCLUSIONS

This article summarises the 2011 Eurosystem Structural Issues Report (SIR) on the distributive trades in the euro area, which aims to contribute to a better understanding of the impact of structural features of the distributive trades on prices and price-setting behaviour. The main findings are:

- There remains a considerable degree of price dispersion across the euro area. The evidence indicates a limited degree of price convergence up to the period around 2004-2006, which subsequently appears to have stalled or even been reversed. There is also compelling evidence of a strong “border effect” on prices across euro area countries, which suggests ample scope for further improving the Single Market. Structural and regulatory features of the distributive trades sectors help explain cross-country differences in price levels.

- Using information drawn from the IPN and WDN, price-setting behaviour is considered. More competition is found to be associated with more frequent price changes in the retail sector.
- The relationship between price dynamics at the regional level and competition measured at different levels of organisational and spatial aggregation and across a number of product groups is examined. A key finding is that higher market concentration is associated with higher price growth for food and drink products in the recent period.
- This report also addresses the magnitude and speed of cost pass-through. Producer prices generally react faster and more strongly to cost shocks than consumer prices. The degree of competition appears to be positively related to the pass-through of import to consumer prices. With regard to food prices, a greater presence of discounters seems to be associated with a higher pass-through.

From a policy perspective, the analysis has highlighted the importance of structural reforms in enhancing competition in the distributive trades. The findings regarding the impact of structural features on price-setting behaviour and on price level differences suggest that further progress in enhancing effective competition in the distributive trades sectors could contribute to a reduction of border effects and a narrowing of price differentials. In respect of product market regulation, although there is evidence of an easing pattern in the degree of regulation, there remains considerable scope for further progress.

All in all, a crucial step towards further progress would be the full and consistent implementation of the Services Directive. The benefits from further liberalisation and harmonisation of market conditions may be seen in part from the finding in this report that more product market regulation is associated with higher price levels. Moreover, reforms could reduce mark-ups and give rise to significant increases in both

output and real wages. In order to unleash the full potential and benefits of online and cross-border trade, the remaining regulatory and legislative barriers (such as consumer law) need to be addressed. Legislation envisaged under the Single Market Act, an initiative by the European Commission to improve the functioning of the Single Market, is a step in the right direction. Relevant proposals include measures to increase data protection and legal certainty in electronic commerce.