Mergers in the food retailing sector: an empirical investigation

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Abstract

This paper deals with the issue of mergers in the retailing sector. It provides an empirical application to the Portuguese food retailing market. The likely effects of a possible merger are analyzed ex-ante. The novelty of the paper lies in the inclusion of downstream and upstream market power effects to the retailers. The effects of additional concentration on prices are estimated, as well as the price reduction insiders are likely to obtain (for a limited set of producers) via an improved bargaining position. The final effect on prices depends on how these cost reductions are reflected on insiders’ prices - the pass through rate. For realistic values of this rate we find that the merger in question will most likely increase consumer prices and, therefore, should not be allowed given the national legislation.
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1 Introduction

The European economy is going through a process of change which is impacting on the distribution chain and the position of the wholesaler. Greater concentration and integration in retailing has altered the position of the wholesale trade, the traditional intermediaries between manufacturers and retail outlets. The trend has been for the wholesale functions to be absorbed by the retail chain and this trend is likely to continue. (…)

Beside marketing as a main factor for increasing sales, retail management focuses on managing cost structures. For that reason, great emphasis is placed upon maximizing buying power benefits through scale and efficiency. Scale is related to the volume of products sold within a product range, sales growth via internal development, acquisition or collaboration.

Green Paper on Vertical Restraints in EC Competition Policy (1997, chapter one)[emphasis added]

Confirming these trends predicted by the European Commission, the wave of mergers of the recent past included firms involved in retailing activities. The European food retailing sector has recently witnessed a large number of such operations. Some of these have been scrutinised by national and European Union (EU) competition authorities. To mention just a few, there was the Carrefour acquisition of Promodes through a public exchange offer (notified on October 5th, 1999), the acquisition by Rewe of Julius Meinl AG (February, 1999), the 1996 acquisition by Kesko Oy of 56.3% of the capital of Tuko Oy and the Auchan acquisition of 94% of Pão de Açúcar (July, 1996). Along this trend, a possible merger involving the two largest Portuguese groups, Sonae and Jerónimo Martins, was mentioned in the press, on late December 1999.

Making use of a unique data set on retailer-producer relations, the main purpose of this paper is to provide an ex-ante evaluation of this possible merger between two major retailers operating in a small European economy, Portugal.

The analysis of mergers in retailing activities raises issues that are not present in other cases. The welfare effects, for example, are much less clear, as one can see in Dobson & Waterson (1997). This kind of mergers has two major implications, corresponding to the two highlighted sentences of the opening citation: on the one hand, retailing firms involved in a given merger may compete with each other for the same final consumers. A merger will
lessen competition, leading to higher consumer prices. This concern justifies the review of mergers likely to increase market power by economic authorities. In the US, the Department of Justice and Federal Trade Commission Horizontal Merger Guidelines (promulgated in 1992) adopted the Herfindahl-Hirschman Index (HHI) considering that mergers leading to a post-merger HHI superior to 1000 are likely to create, enhance or facilitate the exercise of market power. In the European Union, any concentration with a Community dimension\(^1\) are appraised in accordance with the provisions stated in the Council Regulation No 4064/89.

According to the Portuguese legislation, a merger can be challenged on the basis of lessening competition, provided that insiders market shares exceed 30\% or that aggregate sales are in excess of PTE 30,000m (slightly less than Euro 150m.), in which case a prior notification to the authorities is mandatory. Otherwise, the merger is automatically cleared by economic authorities. In the case under consideration, these thresholds are clearly surpassed.

On the other hand, insider firms may benefit from increased bargaining power, enabling them to buy the goods from the producers at lower costs. Despite the fact that this may be positive for retailers and final consumers, such increase in bargaining power may also be challenged by the authorities. This issue has received less attention in policy-making until the recent past. Retailer power was one of the issues considered in the appraisal of the mergers mentioned above and the Commission has accepted undertakings in two cases where a dominant position in both the selling and procurement markets.\(^2\) Additionally, the abuse of a dominant position is prohibited by Article 82 but, until recently, it had not been applied to abuses of dominant position held by retailers in the procurement market. According to the Portuguese law decree 371/93, the abuse of economic dependency (defined as a given supplier or customer having no equivalent alternative to some firm) is forbidden when, for instance, it leads to the “artificial” setting of a buying or selling price, or when there is interference with the market mechanisms.

Although the merger, according to the latest information, has been cancelled, our study remains of interest for three reasons. First, we identify, empirically, a clear link between geographic concentration of retail outlets and prices to the consumers. Second, we trace and quantify the market

\(^1\)A concentration has a Community dimension when the combined aggregate worldwide turnover of all the undertakings exceeds Euro 5000m and the aggregate Community turnover of each of at least two of the firms involved is more than Euro 250m, unless each of the firms generates more than 2/3 of its Community turnover in the same Member State.

\(^2\)Rewe/Meinl, O.J.L. 274/1 (1999) and Carrefour/Promodés (Case M.1684)
power of retailers vis-à-vis producers. Third, the two elements above allow for the simulation of the likely effects of the merger: lower prices in the sales of manufacturers to retailers, an expectation of pass-through of such cost savings to consumers, and the increased concentration effect on consumers’ prices.

Each of these elements is of interest in itself, as the empirical literature on retailing activities is scant. Taking them as a group, we provide an economic assessment of a (possible) merger in retailing activities.

Despite the use of data for a small European country, Portugal, we believe our results have interest for a wider audience. Regional mergers in some countries may be similar to what we observe for Portugal and mergers in similar size countries have been reviewed (e.g. the Tesko Oy case in Finland). The fundamental economics behind increased bargaining power of retailers, the extent of pass-through and the price effects of increased concentration are likely to be present everywhere.

The paper is organized in the following way. The next section estimates the price effects of the merger resulting from an increase in market concentration, assuming the same cost structure. The possible cost reductions arising from an increase in buyer power are estimated in Section 3. Section 4 addresses the issue of the pass-through rate. Finally, Section 5 concludes.

2 The price effects of an increase in concentration

There is a growing literature linking market structure to prices. According to the traditional models, market concentration is presumed to affect pricing in at least two ways. Firstly, when a market is controlled by a limited number of firms the chances for cooperation among these are increased. Leaving cooperation aside, a smaller number of independent firms will make an increase in price more profitable because each firm will have a higher market share. Consequently, we expect that markets with a higher concentration will have higher prices.

This section estimates how a given store pricing decision is affected by brand specific factors and by store-specific factors. Local concentration is one of the store specific factors we expect to affect prices. It is possible to roughly calculate how concentration will change after the merger, allowing us to compute the consequences the merger has at the pricing level. To measure market concentration it is necessary to start by characterizing the firms involved and defining the relevant market either in terms of relevant
product or relevant geographic terms.

2.1 Brief characterization of the “merger”

In 1998, JMR - Gestão de Empresas de Retalho, SGPS, SA was the holding of the Jerónimo Martins group (JM), controlling 100% of Gestiretalho - Gestão e Consultoria para a Distribuição a Retalho, SA. who, in its turn, owned 100% of Pingo Doce - Distribuição Alimentar, SA (Pingo Doce). These two firms respectively held 35% and 65%, of Feira Nova - Hipermercados, SA (Feira Nova). The main activity of this group is food retailing in the Portuguese mainland and in the Madeira archipelago.\(^3\)

By the end of 1998, the Pingo Doce brand had 146 stores, totalling a selling area of 123.564 m\(^2\). Total sales in 1998 amounted to PTE 141.000 m. At the same time, the brand Feira Nova was made up of 5 hypermarkets and 12 mini-hypers, covering a total area of 72.156 m\(^2\) and selling PTE 92.500 m. These brands have stores in every one of the 18 Portuguese districts.

The JM group is also present in the wholesale of food products with the brand Recheio having around 30 stores and sales of PTE 96.000 m. The group has expanded its retailing activity to Poland, Brazil and the UK.

As for the Sonae group, Modelo Continente, SGPS, SA (MC) holds 60% of Modelo SGPS, SA, 100% of Modelo Continente Hipermercados, SA and 100% of Supermercados Bonjour Modelo, SA. The same group is also present in other retailing markets such as electric appliances or clothing, owning firms such as Worten - Equipamentos para o Lar, SA, Modalfa - Comércio e Serviços, SA. By 1998, there were 45 Modelo supermarkets, 6 Bonjour Modelo supermarkets, 8 Modelo Express convenience stores as well as 10 Continente hypermarkets. The supermarkets covered an area of 117.864 m\(^2\) while the hypermarkets totalled 105.557 m\(^2\). Like the JM group, Sonae is present in every district of the Portuguese territory and in Brazil. Total sales in Portugal, in 1998, amounted to PTE 390.000 m., including non food retailing.

2.2 The relevant market

In the merger cases referred in the introduction, the European Commission carried out the analysis at the national level, with the exception of the Auchan/Pão de Açúcar where local markets at Burgos and Alcalá de

\(^3\)Recently, the holding company was split in two different holding companies: one controlling retailing activities, the other the remaining activities of the economic group.
Henares, both in Spain, were considered.  

The main arguments were the fact that most of the strategic decisions are made at the national level and not regionally or locally. Such is the case of advertising campaigns, bargaining with suppliers/producers, client fidelization strategies and selection of the range of products sold. In some cases, even some price decisions are made at this level. The overlapping in the catchment area of the stores also favors the nationwide approach. In *Kesko/Tuko*, the European Commission did not find necessary to establish regional markets because market shares at local or national level were of the same order.

The referred E.C. decisions state that the coverage area (catchment area) of a given selling location (supermarket or hypermarket) is limited: 10 to 30 driving minutes are generally mentioned as the radius of coverage of a given store (although this radius may be up to 60 km for the larger stores).  

In recent work, Asplund & Friberg (1999) estimated the impact of market concentration on Swedish retailers’ prices. The market was defined in accordance with the administrative subdivisions of Sweden (counties and postal area). Claycombe (2000) showed that concentration has a strong positive correlation with furnishing and clothing prices in the MSA. In both cases, markets were exogenously defined.

We follow the radius approach used by the E.C. and the U.K. Competition Commission in its C.C. Supermarkets Report. We assume that a given store competes directly with all other stores located in *Concelhos* (local municipalities) with a capital located in a circle with a radius of 30 km, centered at the capital of the *Concelho* where the store is established. The use of the capitals is justified by the fact that most of the relevant stores are located in these cities. The Portuguese mainland is divided in 18 districts, each containing a variable number of *Concelhos*. There are a total of 276 of these smaller administrative units and this the number of markets involved. Note, however, that the boundaries of the markets are not coincident with the boundaries of the *Concelhos*. Each market may include stores located in the neighboring *Concelhos*. Mostly in urban areas, people daily commute and travel out of their residence *Concelho*, a behavior that enlarges the geographic market in which consumers shop. Commuting variables were used, for instance, in Claycombe (2000).

Another relevant definition concerns the type of stores that belong to the

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4Case No IV/M.784 Kesko/Tuko, OJ No L110/53, 26.4.97 and Case No IV/M.1221 Rewe-Meinl, OJ No L274/1, 23.10.99.

5This was mentioned in the Promodés/Carrefour case, (§26).

6These 30 km can be travelled in half an hour at a realistic average speed of 60 km/h.
relevant market. The E.C. view on this subject is that smaller, specialized stores (like bakeries, butchers or grocers) are complements, rather than substitutes, to the larger food retailers, namely supermarkets and hypermarkets, where a broad range of products enables one-stop shopping. Smith (1999) named these as secondary stores and defined primary stores as those where the consumer spends the greatest weekly amount. In its Supermarkets Report, the U.K. Competition Commission considered “supermarkets with 600 m² or more of grocery sales area, where the space devoted to the retail sale of food and non-alcoholic drinks exceeds the 300 m² and which are controlled by a person who controls 10 or more such stores”.

On the other hand, Asplund & Friberg (1999) use information for 1000 of the 8500 stores in Sweden. In our case, the relevant stores are the so-called Commercial Units of Relevant Size (CURS). These are defined as the stores belonging to a brand with an aggregate selling area not inferior to 15.000 m² or individual stores with a selling area not inferior to 2.000 m². In 1998, there were 781 of these stores belonging to 17 different selling brands (Modelo, Bonjour, Continente, Pingo Doce, Feira Nova, Jumbo, Pão de Açúcar, Intermarché, Ecomarché, Minipreço, Dia, Lidl, Leclerc, Carrefour, Monteverde, Nobrescolha, Hussel) which were owned by 10 groups.³

Post merger entry is a relevant aspect when considering the anti-competitive effects of a merger. It is assumed that firms are less likely to increase their prices if there is a strong possibility that new rivals will respond by entering the market. In the markets under analysis there is no free entry given that, the building of new CURS (or the modification of existing ones) is dependent upon previous authorization from the authorities.⁴ Lobbying from existing retailers, traditional commerce and environmental groups makes the morose decision uncertain.

2.3 The data set

Price indexes for 1998 for two different bundles of goods were calculated for a sample of 522 stores (which include non-CURS’s) located in every district of the Portuguese mainland. To construct the price index, each product was weighted by its share in the family budget. The value of 100 is attributed to the store selling at the lowest price which means that the indexes only allow for comparisons between stores and not between bundles. The two bundles are the following:

A fixed bundle, C1, including 121 products with well defined brand and

³The number of stores and selling area for each group is provided in a table below.
⁴This is clearly expressed in the Law Decree 218/97 (art. 4).
product characteristics (includes the following categories: fat, milk and its
derivatives, beverages, personal hygiene products, house cleaning products,
fruit and vegetables, fish, poultry, pork, beef and other food products). This
bundle cannot be found in some discount stores because these do not sell
some of the included brands.

A bundle involving 97 products generically defined and sold at the lowest
price available. In this case the brand of the product included in the price
index may differ from store to store. This bundle is denoted by \( C^2 \). It is
possible to purchase bundle \( C^2 \) in all of the above mentioned stores. It is
highly likely that this bundle is constituted by the retailers’ private brands
(own brands). As this bundle does not include some specific brands, it can
be purchased in a higher number of stores and has a higher number of valid
observations.

The bundles were exogenously determined and should be seen as price
indices of a composite good. By construction, and to ensure comparability
across stores, the bundle was kept constant. The information was collected
and the indices were constructed by the consumers’ association DECO (As-
sociação Portuguesa para a Defesa do Consumidor) and published in its
monthly report.\(^9\) It also presents price indexes for other bundles involving
a smaller number of related products (groceries, drugstore items, meat, and
others).

A supermarket carries thousands of items, raising the issue of what is
the relevant way to look at market power from supermarkets. Looking at
the average margin may be misleading as the same average margin may be
the front-end, conceivably, of quite distinct situations. Moreover, what if
consumers are sensitive only to some products’ prices and have no clear idea
about the cost of the “bundle”? These questions can only be answered with
detailed information at the product level, which is unavailable to us. Though,
in a certain sense, the bundle of products we consider may not be fully
representative of the whole range of products made available by supermarkets
but include the most important products for household consumers, so the
issue is somewhat mitigated.

The location of all of the 781 stores is known, namely the Concelho each
store belongs to. Concentration in each local market is measured by the
Herfindahl-Hirschman Index (HHI).

It is necessary to have information on all the firms’ market share in order
to obtain the HHI. This kind of data is unavailable. However, sales are
highly correlated to selling area and for all the 781 CURS’s this information

\(^9\)Pro Teste, No 191, April 1999
is available from the Commerce Observatory.  

To calculate the HHI for each local market, a matrix $M$ (276 x 276) was built. The element $m_{ij}$ takes on the value 0 if the distance between the capitals of Concelho $i$ and Concelho $j$ is bigger than 30 km (in a straight line) and the value 1 otherwise. More information is summarized in matrix $A$ (276 x 17), where $a_{ij}$ represents the total area that brand $j$ has at Concelho $i$. The element $n_{ij}$ belonging to matrix $N = MA$ (276 x 17) indicates the selling area that brand $j$ owns in the local market centered on Concelho $i$. Note that more than one brand may belong to the same group. Matrix $G$ (17 x 10) has a generic element $g_{ij}$ that takes on the value 1 if brand $i$ belongs to group $j$. Each row $i$ of $C = NG$ (276 x 10) represents the selling area that each of 10 groups owns at market $i$.

The HHI for each market is obtained as

$$HHI_i = \frac{c_i'c_i}{(c_i'1)^2}$$

where $c_i'$ represents matrix $C$’s $i^{th}$ row and 1 is a (10 x 1) unit vector. This HHI measure does not consider smaller competitors and therefore the total number of competitors, $NC$, was included in the regressions.

To control for other demand related factors, purchasing power indices, $PC$, (at Concelho level) were included. To control for cost factors the logarithm of the exposition and selling area of each store, $AR$, was used. It was possible to establish a correspondence with each firms selling and exposition area for 325 of the firms present in the price sample. Other characteristics of the store that may affect its costs relate to its type of retailing. The opening hours are different for some of the stores in the sample (convenience stores) and the same happens in the way products are presented to the consumer (discount stores present products in boxes rather than in the standard supermarket shelves). These differences may also affect the way consumers perceive the products or the pricing strategy. Therefore, discount stores and convenience stores were assigned each a different dummy variable, $CV$ and $DC$, respectively.

Although a small country, Portugal is far from being an homogeneous extension. Namely there are important differences as far as geography, infrastructure and preferences are concerned. To control for these differences

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10It is also possible to have information regarding the individual area of some smaller stores, members of the Portuguese Association of Retailing Companies (APED - Associação Portuguesa de Empresas de Distribuição).

11Concelho population, purchasing power index and number of food retailing stores were obtained from I. N. E.- Instituto Nacional de Estatística, all for 1998.
five regional dummy variables were used. The number of observations belonging to each NUTS II-region are:

<table>
<thead>
<tr>
<th>Region</th>
<th>C1</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Region</td>
<td>79</td>
<td>89</td>
</tr>
<tr>
<td>Central Region</td>
<td>66</td>
<td>84</td>
</tr>
<tr>
<td>Lisbon Region</td>
<td>109</td>
<td>124</td>
</tr>
<tr>
<td>Alentejo Region</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Algarve Region</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>279</td>
<td>325</td>
</tr>
</tbody>
</table>

where \(RN, RC, RL, RA\) and \(RG\) stand for the Northern Region, Central Region, Lisbon Region, Alentejo Region and the Algarve, respectively. In estimation, the baseline case will be the Lisbon region.

We have not yet addressed the factors that may explain the pricing strategy of the group as a whole. These factors are specific to each brand as the same group may have two or more different strategies. Brand positioning, advertising, bargaining conditions with producers, existence of own transport, range of products sold and so on. All these effects are summarized in a dummy variable for each selling brand. As the consumption bundle is precisely the same for each observation this also allows us to study how the different brands are valued by the consumer, assuming stores are setting the equilibrium prices.

The distribution of the sample prices according to the brand and type of retailing are presented in the following table, which also presents, for 1998, the total area and number of stores (\(# S\) owned by each group:

<table>
<thead>
<tr>
<th>Group</th>
<th>Brands</th>
<th>C1</th>
<th>C2</th>
<th>Area (m²)</th>
<th># S</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM</td>
<td>PD-Pingo D./FN-Feira N.</td>
<td>86/13</td>
<td>86/13</td>
<td>196.584</td>
<td>165</td>
</tr>
<tr>
<td>Sonae</td>
<td>MD-Modelo/CT-Cont.</td>
<td>39/9</td>
<td>39/9</td>
<td>223.421</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>CF-Carrefour</td>
<td>4</td>
<td>4</td>
<td>42.649</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>AU-Auchan</td>
<td>10</td>
<td>10</td>
<td>67.230</td>
<td>11</td>
</tr>
<tr>
<td>ITMI</td>
<td>IT-Eco/Intermarché</td>
<td>42</td>
<td>42</td>
<td>132.151</td>
<td>127</td>
</tr>
<tr>
<td></td>
<td>LC-Leclerc</td>
<td>4</td>
<td>4</td>
<td>9.991</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>LL-Lidl</td>
<td>0</td>
<td>28</td>
<td>91.449</td>
<td>98</td>
</tr>
<tr>
<td>Promodés</td>
<td>DI-Dia/ MP-Minipreço</td>
<td>0/49</td>
<td>14/53</td>
<td>76.041</td>
<td>291</td>
</tr>
</tbody>
</table>

\(^{12}\)The difference in the number of observations is due to the fact that 46 discount stores do not sell the bundle \(C1\).
The sample includes two convenience stores and 22 non-CURS’s. The brands Lidl, Minipreço and Dia are the only discount stores included in the sample and, as each one will be assigned a different dummy variable, the variable DC is dropped.

2.4 Results

The following regression was estimated using OLS for both bundles, C1 and C2:\textsuperscript{13}

\[ P_{C_i} = \beta_0 + \sum_j \beta_j BD_j + \sum_j \alpha_j X_j + \sum_j \theta_j RD_j \]  

where \( P_{C_i} \) is the price index for bundle \( C_i \), \( BD_j \) represents the brand dummy variable, \( X_j \) the firm or market specific variables (HHI, number of competitors, local purchasing power, exposition and selling area, convenience store) and \( RD_j \) the regional dummy variables.

The results obtained for the prices of the generic bundle, \( C2 \) are presented in Table 1:

\begin{table}[h]
\centering
\begin{tabular}{lcccccc}
\hline
Variable & Model 1.1 & Model 1.2 & Model 1.3 \\
\hline
\textit{C} & 143.02 & 31.96 & 141.49 & 33.07 & 141.43 & 33.28 \\
\textit{HHI} & 19.02 & 3.33 & 18.08 & 3.99 & 18.05 & 3.99 \\
\textit{AR} & -1.90 & 2.97 & -1.75 & 2.79 & -1.76 & 2.80 \\
\textit{PP} & -0.002 & -0.18 & -0.001 & -0.14 & - & - \\
\textit{RA} & -1.71 & 1.05 & - & - & - & - \\
\textit{RG} & -1.90 & -0.65 & - & - & - & - \\
\textit{RN} & -1.61 & -2.09 & - & - & - & - \\
\textit{RC} & -1.10 & -1.27 & - & - & - & - \\
\textit{NC} & 0.0006 & 1.19 & 0.0008 & 1.69 & 0.0007 & 4.18 \\
\textit{FN} & -9.96 & -4.69 & -10.84 & -5.30 & -10.83 & -5.31 \\
\textit{PD} & -5.52 & -4.63 & -5.93 & -5.08 & -5.96 & -5.13 \\
\textit{CT} & -16.91 & -6.42 & -17.70 & -6.84 & -17.70 & -6.86 \\
\textit{CF} & -9.30 & -2.87 & -10.23 & -3.20 & -10.62 & -3.21 \\
\textit{LC} & -12.74 & -4.66 & -13.72 & -5.10 & -13.70 & -5.11 \\
\textit{MP} & -15.05 & -11.43 & -15.28 & -11.76 & -15.29 & -11.84 \\
\hline
Adjusted R-squared & 0.74 & 0.74 & 0.74 \\
Log likelihood & -954.82 & -957.27 & -957.28 \\
\hline
\end{tabular}
\caption{Table 1}
\end{table}

For the fixed bundle, \( C1 \), the analogous results are presented in Table 2:

\textsuperscript{13}Accounting for heteroskedasticity did not produce significant changes in inferences.
The estimations show that local concentration affects positively the price set by each individual firm. As a consequence, the announced merger would lead to a price increase due to the increased market concentration. Local purchasing power and individual store area are also significant (although the first one only as far as the $C1$ bundle is concerned). This means that prices are set according to the specific characteristics of the regional markets firms are present in.

Note that the impact of concentration on prices is more important when one considers bundle $C2$. A common way food retailers have to attract customers is to lower the price of a limited number of products and announce it on TV, outdoors or mailings. Stronger competition, leading to lower such prices is more likely to be captured by bundle $C2$ which includes generic products sold at the lowest price.

The brand specific dummy variables are also relevant. Some brands have characteristics of their own (product range, perceived quality, store layout) that enable them to sell the same bundle at a premium. That is the case of the brand *Pingo Doce*, followed by *Carrefour*. The least expensive brands are the discount stores *Lidl* and *Dia*.

After a merger that leads to a single group controlling the brands *Pingo Doce, Feira Nova, Bonjour, Modelo* and *Continente*, the HHI index (based on the exposition and selling area) will increase in 206 of the 276 markets.\(^{14}\) The average consumer (assuming each member of the population is a potential

\(^{14}\)Of the remaining, 22 are local monopolies (before the merger), insiders are not present in 35 and 13 are served only by non-CURS stores.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 2.1</th>
<th>Model 2.2</th>
<th>Model 2.3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-Statistic</td>
<td>Coefficient</td>
</tr>
<tr>
<td>$C$</td>
<td>119.80</td>
<td>36.90</td>
<td>120.03</td>
</tr>
<tr>
<td>$HHI$</td>
<td>11.95</td>
<td>2.36</td>
<td>10.93</td>
</tr>
<tr>
<td>$AR$</td>
<td>-1.08</td>
<td>-2.73</td>
<td>-1.08</td>
</tr>
<tr>
<td>$PC$</td>
<td>0.03</td>
<td>3.26</td>
<td>0.03</td>
</tr>
<tr>
<td>$RN$</td>
<td>-5.42</td>
<td>-7.74</td>
<td>-5.35</td>
</tr>
<tr>
<td>$RC$</td>
<td>-5.39</td>
<td>-6.64</td>
<td>-5.24</td>
</tr>
<tr>
<td>$RA$</td>
<td>-4.19</td>
<td>-2.88</td>
<td>-3.99</td>
</tr>
<tr>
<td>$RG$</td>
<td>-0.62</td>
<td>-0.41</td>
<td>-</td>
</tr>
<tr>
<td>$NC$</td>
<td>-0.001</td>
<td>-2.76</td>
<td>-0.001</td>
</tr>
<tr>
<td>$CV$</td>
<td>16.04</td>
<td>5.22</td>
<td>16.07</td>
</tr>
<tr>
<td>$PD$</td>
<td>6.28</td>
<td>8.48</td>
<td>6.28</td>
</tr>
<tr>
<td>$CF$</td>
<td>4.58</td>
<td>2.04</td>
<td>4.61</td>
</tr>
<tr>
<td>$AU$</td>
<td>0.20</td>
<td>0.14</td>
<td>0.25</td>
</tr>
<tr>
<td>$IT$</td>
<td>-0.91</td>
<td>-1.11</td>
<td>-0.90</td>
</tr>
<tr>
<td>$LC$</td>
<td>-1.18</td>
<td>-0.55</td>
<td>-1.19</td>
</tr>
<tr>
<td>$MP$</td>
<td>-7.24</td>
<td>-6.74</td>
<td>-7.22</td>
</tr>
</tbody>
</table>

Adjusted R-squared 0.67 0.67 0.67
Log likelihood -778.54 -778.63 -779.44

Table 2
consumer) faced a pre-merger HHI of 0.2604. After the merger, this will rise by 0.114, which, according to the estimates will lead to a price increase of around 1.7% in the case of bundle C2 and 1.1% in the case of bundle C1.

However, these price increases reflect only the increase in local concentration after merger. One expects insiders to have lower costs and to reflect this on prices. The following section estimates the cost reductions, likely to take place after such a merger when insiders have a bargaining advantage. Using it, prices at the producer may suffer a downward pressure.

3 Buyer power

It is commonly accepted that larger customers get better conditions when bargaining with suppliers. These can be the result of the competition process if larger buyers mean lower costs for the suppliers. Alternatively, we may be in the presence of buyer power. Both producer and retailer are in possession of a “must have” good: Retailers act as gate keepers, giving the producer access to final consumers and producers supply the retailers with the product they need to sell. The result of the bargaining game in which access to the “must have” good is sold, is a function of the costs each part has of replacing the other. The fact that larger retailers get lower intermediate prices may result from the fact that the costs of replacing a large retailer are very high for the producers, mainly for the small ones, facing competition from other producers.

If on the one hand consumers can benefit from buyer power, its existence may compromise the producers’ development of new products, the quality of existing products and lead to a hold-up situation, in which producers are unwilling to tailor products to the retailer’s needs. Also, the existence of buyer power can lead to the creation of seller power through the vicious circle described by Dobson (1998).

In practical terms, the U.K.C.C. Supermarkets report concludes that any grocery retailer with more than 8% share of grocery purchases for resale from its stores had buyer power (this is verified by Asda, Safeway, Sainsbury, Somerfield and Tesco). The Commission concluded that the exercise of 27

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15 This was obtained by averaging the HHI for each Concelho using weights equal to the percentage of the Concelho’s population. In what follows, it is implicit the assumption that no store will be closed after the merger.

16 The OECD secretariat proposed in 1998 the following definition: “... a retailer is said to have buyer power if, in relation to at least one supplier, it can credibly threaten to impose long term opportunity cost (i.e. harmful or withheld benefit) which, were carried out, it would be significantly disproportionate to any resulting long term opportunity cost to herself”. In OECD, Buyer Power of Large Scale Multiproduct Retailers §20 (1998).
practices operated against public interest. In all 30 practices were considered to “adversely affect the competitiveness of some of the suppliers and distort competition in the supply market”.

The E.C. has inquired suppliers and established that on average, a 22% of turnover was the figure above which a customer could be replaced only at the cost of very heavy financial losses. On the Metro/allkauf case, a manufacturer was considered to be suffering discriminatory hindrance from retailers with a turnover share as low as 7.5%.18

In this section we use limited supplier data to establish if there is any evidence that larger retailers pay lower prices to suppliers. This allows us to estimate the expected reduction in costs facing the new retailer emerging from the merger.

We assume that the unit price retailer \( i \) pays producer \( j \), \( r_{ij} \), depends of a bargaining process where the weight of the client in the suppliers’ sales, \( w_{ij} \), is of relevance, according to

\[
r_{ij} = e^{C} w_{ij}^{\alpha_0 + \alpha_i + \beta_j}
\]

The following equation was estimated

\[
\ln r_{ij} = C + (\alpha_0 + \sum_i \alpha_i C_i + \sum_j \beta_j F_j) \ln w_{ij}
\]

where \( C_i \) and \( F_j \) are dummy variables assigned to each retailer and producer, respectively.

The data was gathered by a producers’ association. Its associates were asked about the importance of their clients (in percentage of sales) and about the characteristics of the contracts signed with these clients. Total discounts considered include those requiring suppliers to make payments or concessions to gain access to supermarket shelf space (better positioning, promotions within the store, gondola ends, advertising allowances), those imposing an unfair imbalance of risk (buying back unsold items), those imposing charges and transferring costs to suppliers (store refurbishing or opening of a new store).

17 See Rewe-Meinl or Carrefour-Promodés.
The database includes 13 retailers belonging to the 10 groups and 14 producers. The number of relevant observations is 205 because there is more than one contract for the same producer/retailer pair. The identity of the producers was kept confidential to us.

The following results were obtained:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 3.1 Coefficient t-Statistic</th>
<th>Model 3.2 Coefficient t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\theta$</td>
<td>4.330</td>
<td>234.00</td>
</tr>
<tr>
<td>$\alpha_1$</td>
<td>0.061</td>
<td>1.69</td>
</tr>
<tr>
<td>$\alpha_2$</td>
<td>0.071</td>
<td>1.88</td>
</tr>
<tr>
<td>$\alpha_3$</td>
<td>0.006</td>
<td>0.15</td>
</tr>
<tr>
<td>$\alpha_4$</td>
<td>0.058</td>
<td>1.63</td>
</tr>
<tr>
<td>$\alpha_5$</td>
<td>0.067</td>
<td>1.85</td>
</tr>
<tr>
<td>$\alpha_6$</td>
<td>0.068</td>
<td>1.63</td>
</tr>
<tr>
<td>$\alpha_7$</td>
<td>0.065</td>
<td>1.65</td>
</tr>
<tr>
<td>$\alpha_8$</td>
<td>0.101</td>
<td>2.76</td>
</tr>
<tr>
<td>$\alpha_9$</td>
<td>0.075</td>
<td>1.97</td>
</tr>
<tr>
<td>$\alpha_{10}$</td>
<td>0.066</td>
<td>1.73</td>
</tr>
<tr>
<td>$\alpha_{11}$</td>
<td>0.055</td>
<td>1.54</td>
</tr>
<tr>
<td>$\alpha_{12}$</td>
<td>0.109</td>
<td>2.21</td>
</tr>
<tr>
<td>$\beta_1$</td>
<td>-0.051</td>
<td>-3.07</td>
</tr>
<tr>
<td>$\beta_2$</td>
<td>-0.039</td>
<td>-2.52</td>
</tr>
<tr>
<td>$\beta_3$</td>
<td>0.014</td>
<td>0.99</td>
</tr>
<tr>
<td>$\beta_4$</td>
<td>-0.153</td>
<td>-9.99</td>
</tr>
<tr>
<td>$\beta_5$</td>
<td>-0.013</td>
<td>-0.89</td>
</tr>
<tr>
<td>$\beta_6$</td>
<td>0.028</td>
<td>1.17</td>
</tr>
<tr>
<td>$\beta_7$</td>
<td>0.011</td>
<td>0.75</td>
</tr>
<tr>
<td>$\beta_8$</td>
<td>0.013</td>
<td>0.58</td>
</tr>
<tr>
<td>$\beta_9$</td>
<td>0.026</td>
<td>1.16</td>
</tr>
<tr>
<td>$\beta_{10}$</td>
<td>0.023</td>
<td>1.49</td>
</tr>
<tr>
<td>$\beta_{11}$</td>
<td>0.118</td>
<td>7.57</td>
</tr>
<tr>
<td>$\beta_{12}$</td>
<td>-0.128</td>
<td>-10.7</td>
</tr>
<tr>
<td>$\beta_{13}$</td>
<td>-0.044</td>
<td>-2.92</td>
</tr>
<tr>
<td>$\delta_0$</td>
<td>-0.093</td>
<td>-2.58</td>
</tr>
</tbody>
</table>

Table 3

Calculating the estimated elasticities $\eta_{ij}$ for the 182 possible combinations between suppliers and retailers only 30 are positive and these involve systematically three firms (supplier #11 and retailers #8 and #11). For the majority of the pairs supplier/retailer there is evidence that an increase in market shares does indeed lead to lower prices. However, these are not necessarily related to buyer power because, as mentioned earlier, bigger size may mean lower costs for the producers (larger secure orders means lower risk for producers and economies of scale may also be obtained).

$\eta_{12} = \alpha_0 + \alpha_1 + \beta_2 = -0.09 + 0.06 - 0.03$
Let $i = 1$ and $i = 2$ represent the two insiders. After the merger, the estimated percentage reduction in the price insiders pay producer $j$ is obtained by

$$\frac{r_{1+2j} - 1}{r_{12j}} = \frac{\left( w_{1j} + w_{2j} \right)^{\hat{\alpha}_0 + \hat{\alpha}_{1+2j} + \hat{\beta}_j}}{\frac{w_{1j}}{w_{1j} + w_{2j}} \hat{\alpha}_0 + \hat{\alpha}_{1+2j} + \hat{\beta}_j + \frac{w_{2j}}{w_{1j} + w_{2j}} \hat{\alpha}_0 + \hat{\alpha}_2 + \hat{\beta}_j} - 1$$

(4)

where $r_{12j} \equiv \frac{w_{1j}}{w_{1j} + w_{2j}} r_{1j} + \frac{w_{2j}}{w_{1j} + w_{2j}} r_{2j}$ denotes the estimated pre-merger average unit price the insiders were paying to the producers and $r_{1+2j}$ the estimated post-merger price.

The following percentage cost reductions are obtained for the different parameter estimates $\hat{\alpha}_{1+2}$:

<table>
<thead>
<tr>
<th>Producer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\hat{\alpha}_{1+2} = \min{\hat{\alpha}_1, \hat{\alpha}_2}$</td>
<td>6.4</td>
<td>6.7</td>
<td>3.6</td>
<td>13.7</td>
<td>3.7</td>
<td>3.0</td>
<td>3.7</td>
</tr>
<tr>
<td>$\hat{\alpha}_{1+2} = \text{avg}{\hat{\alpha}_1, \hat{\alpha}_2}$</td>
<td>4.9</td>
<td>4.9</td>
<td>1.6</td>
<td>12.0</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Producer</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>$\hat{\alpha}_{1+2} = \min{\hat{\alpha}_1, \hat{\alpha}_2}$</td>
<td>3.6</td>
<td>3.3</td>
<td>3.5</td>
<td>-3.7</td>
<td>12.0</td>
<td>6.7</td>
<td>3.7</td>
</tr>
<tr>
<td>$\hat{\alpha}_{1+2} = \text{avg}{\hat{\alpha}_1, \hat{\alpha}_2}$</td>
<td>1.7</td>
<td>1.7</td>
<td>1.6</td>
<td>-5.9</td>
<td>10.3</td>
<td>4.8</td>
<td>1.7</td>
</tr>
</tbody>
</table>

The average reduction in the first case is around 5% while in the second case is slightly above 3%. Note that it is impossible to estimate the percentage reduction in costs when purchasing from these producers because the weight of each producer in each retailer’s costs is unknown. Insiders claim that 70% of their sales are obtained from only 10% of the suppliers, meaning that the authorities should focus their analysis on these.

Part of these cost reductions are likely to be passed on to the consumers. If one takes the unweighted discount average as an example, it is necessary to have a pass through rate of 22% in the most favorable scenario (bundle $C1$ and a cost decrease of 5%) or 53% in the least favorable scenario (bundle $C2$ and a cost reduction of 3%) if the consumer is to benefit. Note that these pass-through percentages are calculated as if all retailers in the market had the same cost reductions as insiders. This is hardly reasonable. Naturally, the necessary pass-through must be higher if one considers that only insiders see their costs decline but all firms raise their prices due to the increase in market concentration. The above values can be taken as a lower bound to the pass-through rate.
4 Evidence of pass-through

In this section, we analyze whether there is any evidence of pass through. Our pass-through analysis is of lower sophistication than the one carried out in the Staples, Inc. case. This is due to the fact that the required information was not available. Only a competition authority, or some similar institution with the coercive power to obtain information from the firms, is likely to have it.

The previous section showed that, for 13 out of 14 producers, the largest customers face lower unitary costs. Assuming that this result can be generalized to most of the suppliers and that to some extent retailers pass lower costs on to final consumers, final price should depend negatively on the weight of each retailer on suppliers’ sales. To test if there is any empirical evidence of pass through in the Portuguese retailing sector, we estimate regressions similar to the those presented in Section 3, with two major differences. The consumption bundles are more narrowly defined and refer to two kinds of goods: groceries ($C_3$) and drugstore items ($C_4$). The main reason for this choice is that it was possible to obtain not only the prices for these bundles but also the weighted averages of the percentages of all the relevant retailers on the sales of a significant set of producers in these industries. The sample includes 16 producers in the first case (selling PTE $134,047 \times 10^6$) and 6 in the second case (selling PTE $60,052 \times 10^6$) and all the CURS’s. However, there is no information about the prices set by the discount stores Lidl and Dia.

We implicitly assume that there is no significant and permanent cross-subsidizing between different sets of products, meaning that a lower cost in some products should lead to lower prices in the same products.

The equations estimated are presented in the following table 4, where the first two refer to groceries and the last two to drugstore items:

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21 This is due to information availability.
The coefficient associated with the weights is positive in both cases, meaning that a higher average weight within the set of producers considered does not lead to lower prices. Therefore, these estimations show no sign of pass-through whatsoever, with the weight of a retailers group positively affecting prices, despite the fact that it is highly likely that higher weights mean lower costs.

Thus, any cost savings to retailers accruing from the eventual merger would be, quite likely, fully appropriated by them. Consumers would not benefit from such lower costs, and would still face the price increases associated with local higher market concentration.

5 Final Remarks

In the last years, a series of mergers and acquisitions in the food retailing sector have taken place. This paper estimates the impact of a possible merger in the Portuguese food retailing sector, involving the Jerónimo Martins and Sonae groups. For this merger to be approved, the Portuguese competition law imposes that consumers share an equal part of the benefits that insiders obtain through merger. Accordingly, we focus our analysis on the impact on final prices.

The analysis is carried out at two levels. First, the impact of increased concentration on prices, if any, is evaluated. Second, the possibility that
insiders may have lower costs due to their relative size is considered. These may be passed on to final consumers, thus countering the first effect.

As far as market power in the final market is concerned, we show that the price set by each firm depends positively on the local market concentration. Knowing the impact of the merger on market concentration it is possible to estimate the expected impact on prices. This estimate is around 1.1% or 1.7% depending on whether one considers a fixed bundle of well defined products or a generic bundle of products sold at the lowest price. The fact that local concentration affects prices (as well as some other store specific variables) is an argument in favor of a local market analysis rather than a nation-wide approach when assessing the impact of such operations.

This does not consider the fact that insider firms are expected to have lower costs due to their increased bargaining power. It is very difficult to estimate total cost reductions because it is necessary to have information from all (or at least the most important) suppliers. However, we show for a limited set of suppliers that the most important clients (measured in percentage of the suppliers’ sales) do tend to have a lower price. The average price decrease insiders will face is estimated between 3% and 5%. Whether or not consumers benefit from the merger depends on the way that insiders pass these lower costs on to the consumers as lower prices. It is possible to estimate the minimum necessary pass-through rate consistent with the consumer benefitting from the merger. However, we show that for two very specific categories of products, groceries and drugstore items, there is no evidence that the firms representing a higher percentage of a relevant set of producer’s revenue sell to final consumers at a lower price.

On the grounds of the Portuguese competition law, the analysis points towards a rejection of such merger given that it is unlikely that consumers will benefit by getting lower prices.

Merger evaluation in retailing activities must be treated cautiously, as retailers may have double-sided market power. This makes welfare presumptions harder.

Our results suggest that retailers with a strong regional position in Europe (at the national level, in the case of our application) may profit from both sides, consumers and producers. Whether this is a general feature in European markets, it is a matter for future research.
References


Smith, H. (1999), Supermarket choice and supermarket competition in market equilibrium.