

**THE PROPOSED COMBINATION OF SADIA AND PERDIGÃO**

**ANTITRUST ANALYSIS – PIZZA**

**July 22, 2010**

**Bates White, LLC**

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## A. Introduction

- 1) We welcome the opportunity to comment further on the proposed transaction and to respond to the analysis submitted by economic consultants at Fagundes & Associados (“F&A”) on behalf of the merging companies.

### A.1. Review of earlier conclusions

- 2) In August 2009 we submitted a report that outlined horizontal and vertical concerns about the proposed merger and that suggested some possible remedies that would preserve competition for the future.
- 3) The proposed merger gives rise to horizontal concerns because it will substantially increase market concentration. The parties have a dominant share in the sales of frozen pizza to supermarkets. Based on Nielsen data for all of Brazil and for the latest year ending in June 2009, in a branded pizza market, the two companies combined have a market share of supermarket sales of approximately 77%. Further, since Sadia’s Big Foods subsidiary supplies the bulk of private label pizza, the two companies’ joint market share in branded and private label frozen pizza is even larger.
- 4) The third largest manufacturer of frozen pizza is Pif-Paf, which has a revenue share of 6%. All other companies have less than a 1% share. Post-merger, this market structure would be appropriately called a dominant-firm market structure, and it would have a fringe of numerous small brands that would add up to (at most) 23% of the relevant market. Table 6 of the first Bates White report showed that as a result of the merger, the concentration in the frozen pizza segment, measured by the HHI, would increase significantly, from 2,524 to 5,071.<sup>1</sup>
- 5) In addition to the information about market concentration that was included in our first report, we note the following points: Sadia and Perdigão had high shares in frozen pizza not only in supermarkets but in every retail channel, including small grocery stores. Furthermore, this high share was apparent not just in the year ending in June 2009 but in each bimonthly period for July 2006–August 2007 and July 2008–June 2009. (These are the time periods for which we have data.) For each of these bimonthly periods, the joint market share of the parties in frozen pizza sales was at least 70%. As pointed out above, this measure is conservative; it does not include private label pizza, which is produced, to a large extent, by Sadia subsidiary, Big Foods.

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<sup>1</sup> Bates White, The Proposed Combination of Sadia and Perdigão – An Antitrust Analysis, August 26, 2009

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- 6) Although it was not mentioned in our first report, we note that the parties' joint market share is high even when one considers both frozen and chilled pizza. In this segment, the parties' revenue share (again, not including private label) is 58% for the year ending in June 2009, and it is consistently above 57% for all bimonthly time periods for which we have data.
- 7) By the parties' own admission, Sadia and Perdigão have high market shares, and all other companies have very small market shares. F&A reports that Sadia and Perdigão had 25% and 23% market shares, respectively.<sup>2</sup> These figures are based on units as opposed to sales revenue, and they refer to both frozen and chilled pizza. This fact explains the difference between these figures and those included in our first report. Note also that the third and the fourth largest branded producer, Massa Leve and General Mills (Frescarini) have 1.60% and 1.58% market shares, respectively. All other branded producers have less than 1% market shares.
- 8) The proposed merger gives rise to vertical concerns because it increases the merging firm's power vis-à-vis other participants in the supply chain, both upstream and downstream. The merged entity, Brasil Foods (BRF), is likely to use its increased market power to raise rivals' costs or to raise barriers to entry for potential entrants. Two principal means for BRF to achieve this are through exclusionary contracts with retailers and by limiting rivals' or potential rivals' access to its distribution network.
- 9) The merger would increase BRF's bargaining power with respect to stores. The merged firm may insist on trade practices at supermarket chains—slotting allowances and freezer space allocation restrictions—that would effectively limit the access of competitors and new entrants to retail freezer space. In addition, the merged firm might put into effect exclusive contracts with retailers or might offer loyalty program discounts to them, excluding rivals in an anticompetitive way. These practices would be facilitated by the fact that BRF will have a dominant position across a range of frozen products not just pizza (“portfolio effects”).
- 10) BRF is likely to limit rivals' or potential rivals' access to distribution. In many areas of Brazil, Sadia and Perdigão possess the only distribution networks. Absent the proposed merger, if a competitor attempted to expand in other parts of Brazil where frozen-food distribution services are controlled solely by either Sadia or Perdigão, it could play one distributor off the other in negotiating access. In contrast, if, following the merger, there would be only one such distributor, this competitive bargaining would be eliminated.
- 11) The merger of Sadia and Perdigão might also create market power on the buying side. Specifically, as noted in news reports about BRF's claimed efficiencies, reduced purchasing costs are indicated as a major source of cost reductions. Such cost reductions might legitimately result from the economies of scale in purchasing and reductions in transactions costs, but they also might result from the exercise

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<sup>2</sup> Fagundes & Associados, Compensatory Reduction in Marginal Cost (CRMC) Test Report, Figure XXXII, fls. 2139.

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of market power as a buyer. Reduced input costs would clearly benefit the manufacturer, but these cost savings might not be passed on further downstream, especially if the manufacturer has market power. Moreover, this efficiency gain does not correspond to a net gain, rather a transfer from upstream manufacturers to BRF.

- 12) As recommended in our first report<sup>3</sup>, to prevent anticompetitive effects of the merger, one may consider possible structural and behavioral remedies, including the following:
- Require BRF to divest some of its frozen pizza brands
  - Require BRF to divest its store brand pizza
  - Require BRF and supermarkets to allow third-party suppliers to distribute their products, specifically, to reserve freezer space for use by independent brands
- 13) These remedies are broadly in line with previous decisions in Brazil, the United States, the UK, and the EU in related consumer goods industries. Section G of the First Report by Bates White references a number of decisions by authorities in these countries. In each of these cases, a merger was approved only with significant remedies. The merging parties were required to divest manufacturing assets, brands, distribution assets, or a combination of these, as a condition for approval of the merger. The first Bates White report concluded that by imposing these conditions antitrust authorities facilitated entry and helped empower new entrants as a means of preserving competition.

### A.2. Summary of new conclusions

- 14) More recently, a number of analyses were submitted by F&A, working on behalf of the merging companies.<sup>4</sup> With respect to pizza, the main analyses and findings of these reports are as follows:
- The statistical relationship between the prices of frozen pizza and chilled pizza was analyzed using time-series methods (cointegration tests and Granger-causality tests). These tests were claimed to provide evidence that frozen pizza and chilled pizza belong in the same relevant market.
  - A “Critical Elasticity Test” was implemented to check whether frozen and chilled pizzas constitute a relevant market. It was found that the aggregate price elasticity for these products exceeds the critical elasticity, and this implies that a hypothetical monopolist would find it

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<sup>3</sup> Bates White, The Proposed Combination of Sadia and Perdigão – An Antitrust Analysis, August 26, 2009

<sup>4</sup> F&A submitted the following reports: “Market Definition Report,” October 2009; “Supplement to the Market Definition Report,” October-November 2009; “Critical Elasticity and Critical Loss Test Report,” November 2009; “Entry Report,” January 2010; “Compensatory Reduction in Marginal Cost (CRMC) Test Report,” February 2010.

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profitable to increase the prices of frozen and chilled pizza by 5%. As a consequence, it was concluded that the relevant market must include other products such as home delivery pizza or “pizza bought in rotisseries of large supermarket chains.”

- A merger simulation exercise was implemented to estimate the effects of the merger on the prices of the major pizza brands, private label pizza, and a catch-all category referred to as “others.” Using a logit demand model and an assumption about the size of the potential market for pizza, it was estimated that the prices for the brands of Perdigão and Sadia will increase by 0.06% and 0.05%, respectively. A similar analysis was undertaken to estimate the marginal cost reductions needed to keep post-merger prices at the same level as premerger prices (“Compensatory Marginal Cost Reduction”). It was estimated that the compensatory reduction is 0.09% and 0.07% for Perdigão and Sadia, respectively.
- Market entry is estimated to be likely, timely, and sufficient. A Net Present Value analysis is presented as support for the argument that entry into pizza manufacturing is profitable and therefore likely. Based on data provided by the merging parties, the time required for entry is between 9 and 11 months. Entry is also of sufficient scale as shown by the recent entry episodes.

15) The remainder of this report analyzes and responds to these claims in detail. In summary, we find the following:

- The time-series tests for market definition for pizza used by F&A are unreliable and inappropriate for addressing the question of whether chilled and frozen pizza are in the same relevant antitrust market. Moreover, F&A’s estimation results indicate that the price ratio of frozen and chilled pizza does not tend toward any particular value as might be expected if frozen and chilled pizza were close substitutes. This suggests that frozen and chilled pizzas are not in the same relevant market, because they are not particularly close substitutes.
- F&A estimates of the aggregate elasticity of demand for their proposed relevant market consisting of chilled and frozen pizza is implausibly large, inconsistent with other published studies, and close to the theoretical maximum value permitted in their modeling framework. Furthermore, their findings about likely merger price effects are implausibly small. Indeed, their model implies that a merger of all of the leading firms producing frozen or chilled pizza would cause no significant price effects.
- The implausible findings of F&A are easily explained by their arbitrary use of a “logit” model of consumer demand for pizza together with their assumption that actual sales of all brands of frozen and chilled pizza collectively account for only about 1% of potential sales for these products. F&A’s assumption that the potential market is very large compared to actual sales of any one

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brand ensures that their model predicts almost no competition between rival brands of frozen pizza.

- Instead, F&A's model implausibly suggests that almost all of the sales that would be lost in response to a small price increase for one of the merging brands of frozen pizza would be diverted to products outside their proposed market of frozen or chilled pizza. In essence, they have assumed that the "outside" alternative (which includes home delivery pizza and other non-pizza products) is the next best substitute for each individual brand of frozen and chilled pizza for almost all consumers. Because they have already assumed that there is almost no competition among different brands of frozen and chilled pizza, it is not surprising that they find no adverse price effects from the merger.
- While F&A also presents some findings using other demand models, in each case, the alternative model uses demand elasticities that are matched to the implausible substitution patterns obtained from their logit model. Therefore each of these alternative analyses suffers from the same basic flaws as their analysis that uses the logit model.
- New simulations confirm that F&A's analyses are sensitive to their assumptions about the size of the potential market for frozen or chilled pizza and that plausible alternative assumptions lead to significant merger price effects. Evidence from data on actual margins (used by F&A to calculate their critical elasticity) indicates that the model does not match actual margins well but matches them better when the aggregate elasticity of demand is assumed to be much smaller. This implies a relatively small potential market and significant merger price effects.
- Putting aside F&A's claims about the relevant market, their model improperly fails to account for any differentiation between frozen and chilled pizza. This leads them to underestimate the degree of competition between the merging firms' products and to underestimate merger price effects, even after correcting for their inappropriate assumption about the size of the potential market.
- A finding that the market is no broader than frozen pizza would be consistent with the available evidence, and with the findings of the U.K. Office of Fair Trading in their review of the merger of Dr. Oetker and Schwan. Relying only on their flawed empirical analysis, F&A claims that the relevant market includes not only frozen and chilled pizza, but also other products including home delivery pizza and pizza purchased in rotisseries. However due to the flaws in their empirical analysis they do not offer evidence that even chilled pizza should be included.
- F&A's claims that products such as home delivery pizza and pizza purchased in rotisseries should be included in the relevant market is purely speculative, and is at odds with findings of marketing studies and antitrust authorities around the world that indicate that mode of distribution and delivery is an important differentiating characteristic for processed foods, including pizza. For

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example, in the AmBev case, SEAE defined beer sold through different delivery channels as distinct products.<sup>5</sup> Similar conclusions were reached in the U.K. and Europe in the DrOetker/Schwan<sup>6</sup> merger and in the Nestle/Schöller<sup>7</sup> merger. In the absence of evidence to the contrary, it is not appropriate to define markets more broadly than in these precedent cases.

- F&A's conclusions about ease of entry are at odds with available information about the costs and challenges of obtaining distribution and brand acceptance in many parts of Brazil and with Dr. Oetker's own experience entering the Brazilian market.

### A.3. Decision issued by the Secretariat for Economic Monitoring

- 16) The Secretariat for Economic Monitoring (SEAE) recently issued its decision about the Sadia/Perdigão merger.<sup>8</sup>
- 17) In SEAE's opinion, the merger raises serious competitive concerns. SEAE points out that in many of the relevant markets, including the relevant market for frozen pizza, the joint market share of the parties well exceeds 20%. SEAE undertook an elaborate entry analysis, concluding that entry would not be likely, timely and sufficient. Also, in SEAE's opinion, the parties failed to present sufficient evidence for merger-specific efficiencies or synergies.
- 18) For all these reasons, SEAE recommends that the merger be only approved with remedies. SEAE suggests two alternative remedies: the first includes a temporary licensing of a major brand (either Sadia or Perdigão), the second includes the divestiture of many of the minor brands (including the two minor pizza brands, Batavo and Rezende).
- 19) As discussed further below, while these remedies may appropriately address horizontal concerns, they do not address the vertical competitive concerns related to access to distribution (or lack thereof). Therefore, we propose that additional remedies are needed to ensure that BRF's competitors will have sufficient access to distribution channels on competitive terms. In particular, we recommend remedies that would require BRF, third-party distributors in exclusive contract with BRF, and supermarkets to share distribution channels (including access to freezer space) with third-party suppliers of frozen pizza on non-discriminatory and competitive terms.
- 20) The SEAE report includes a critical discussion of the various reports prepared by F&A. SEAE points out many of the issues and shortcomings of the F&A analyses. This report confirms many of these issues and shortcomings, and discusses other flaws in the F&A analyses that are not mentioned in the

<sup>5</sup> Ato de Concentracao No.08012.005846/99-12 – Antarctica e Brahma, SEAE Report, at paragraph 40.

<sup>6</sup> Office of Fair Trading decision, ME/4033/09 -- DrOetker/Schwan, May 5, 2009

<sup>7</sup> European Commission merger decision COMP/M.2640 – Nestle/Schöller, February 25, 2002, at paragraph 17.

<sup>8</sup> Ato de Concentracao No. 08012.004423/2009-18 – Perdigão S/A e Sadia S/A, June 29, 2010

SEAE report. The analysis presented here confirms the SEAE conclusion that the F&A analyses were flawed and should not be relied upon.

## **B. Time-series tests for market definition**

- 21) F&A uses various analyses of the time-series properties of pizza prices for purposes of market definition.<sup>9</sup> Their main conclusion is that frozen pizza and chilled pizza are in the same relevant antitrust market. The main support for this finding is econometric evidence that the prices of frozen pizza, chilled pizza, and wheat flour are cointegrated.<sup>10</sup> However, the cointegration tests used by F&A (and related methods such as Granger causality tests) are unreliable tests for defining relevant antitrust markets. Furthermore, the test evidence presented by F&A indicates that the relative prices of frozen and chilled pizza do not tend towards any particular constant value, and this suggests that these products are not close substitutes and should not be placed in the same relevant market.

### **B.1. Price cointegration tests offer unreliable evidence for market definition**

- 22) Under the Horizontal Merger Guidelines of Brazil, the “hypothetical monopolist” test “is the analytic tool used to check the degree to which goods and services can be substituted and, as such, for the definition of the relevant market.”<sup>11</sup> The relevant market under this standard is defined as “the smallest group of products and the smallest geographic area needed for a supposed monopolist to be able to impose a small but significant and non-transitory increase in prices”—a “SSNIP.”<sup>12</sup> This standard is used in many countries and has received considerable attention in the academic and legal literature.
- 23) If the demand faced by a hypothetical monopolist is very sensitive to price changes, then the monopolist will not be able to profitably impose a SSNIP in the relevant market. Therefore, the hypothetical monopolist test is closely tied to evidence on the price elasticities of demand for products in the proposed relevant market. In order to satisfy the “smallest market” principle of the test, products in the same relevant market typically must be close substitutes for each other relative to their substitutability for products not in the market. Cross-price elasticities, which measure the substitutability of goods, are especially important for market definition using the hypothetical monopolist standard.

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<sup>9</sup> Fagundes & Associados, Market Definition Report, October 2009, fls. 1755–1955.

<sup>10</sup> Fagundes & Associados, Market Definition Report, October 2009, fls. 1934–1936.

<sup>11</sup> SEAE/SDE Horizontal Merger Guidelines – Portaria n°50, August 2001, paragraph 28.

<sup>12</sup> SEAE/SDE Horizontal Merger Guidelines – Portaria n°50, August 2001, paragraph 29.

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- 24) Econometric tests measuring time-series properties of prices, such as correlation or cointegration, have sometimes been suggested as an alternative approach for delineating the relevant market. A correlation test examines whether the relative prices of two or more goods tend to be constant over time, as might be expected of close substitute products. Cointegration tests can, under some circumstances, offer evidence that relative prices tend towards a constant, on average, over sufficiently long periods of time. The tests are convenient to implement because they require data only about prices.
- 25) However, these tests do not provide or use direct evidence about price elasticities or patterns of substitution and therefore are only weakly related to the hypothetical monopolist test for market definition. As a consequence, the use of these tests for market definition has been criticized in the academic literature. For example, Werden and Froeb (1993) offer strong criticism to the use of time-series properties of prices for market definition. They note that “the forces driving these price tests are not the same as those that give rise to market power, and therefore these price tests are likely to reach erroneous conclusions if used to delineate antitrust relevant markets.”<sup>13</sup> Werden and Froeb provide numerous specific examples and reasons for this conclusion, some of which are summarized below.
- 26) Correlation or cointegration can be spurious. It is possible that the prices of two products are correlated as a result of a common dependence on underlying forces of supply and demand, even though the products are not good demand substitutes. For example, gasoline and certain petroleum-based chemicals that have no common uses may nevertheless have correlated prices due to a common cost factor—petroleum. And cold weather may produce price increases for both heating oil and hot beverages, and this may cause their prices to be correlated. But this does not indicate that hot tea is a close substitute for heating oil. Furthermore, under inflationary conditions, prices of many products tend to follow the same time trend, whether or not they are close demand substitutes. Werden and Froeb (1993) point out that “cointegration has problems similar to correlation. If common influences, such as costs or inflation, drive two prices, they may be cointegrated even though the prices are not closely linked through demand substitutability.”<sup>14</sup>
- 27) Cointegration is a long-run concept.<sup>15</sup> Arbitrary deviations between two prices for some period of time can be present even if they are cointegrated, because cointegration demonstrates (at most) that

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<sup>13</sup> G.J. Werden and L.M. Froeb, “Correlation, Causality, and All that Jazz: The Inherent Shortcomings of Price Tests for Antitrust Market Delineation,” *Review of Industrial Organization* 8 (1993): 329–53. See also Jonathan B. Baker, “Why Price Correlations Do Not Define Antitrust Markets: On Econometric Algorithms for Market Definition,” Federal Trade Commission, Bureau of Economics, Working Paper No 149, 1987; and David T. Sheffman and Pablo T. Spiller, “Geographic Market Definition under the US Department of Justice Merger Guidelines,” *Journal of Law and Economics* 30 (1987): 123–47.

<sup>14</sup> G.J. Werden and L.M. Froeb, “Correlation, Causality, and All that Jazz: The Inherent Shortcomings of Price Tests for Antitrust Market Delineation,” *Review of Industrial Organization* 8 (1993): 329–53.

<sup>15</sup> Two series are said to be cointegrated if there exists a linear combination (a weighted average) of the two series that is stationary. A time series is said to be stationary if its statistical properties do not vary with time, e.g., if it tends to revert to a constant long-run value, if the effects of shocks are only temporary. In other words, a stationary time series can still diverge from its mean as long as it also returns to its long-run value in some properly defined statistical sense.

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relative prices tend towards a constant on average. Therefore, products that are not very close substitutes except in the very long run may have cointegrated prices. As Werden and Froeb (1993) point out, “the arbitrage process can operate very slowly—too slowly to prevent a price increase for several years.”<sup>16</sup>

- 28) In a recent study, Coe and Krause (2008) conclude that price-based tests “provide little economically meaningful information to antitrust practitioners.”<sup>17</sup> They use synthetic data generated by a differentiated product model in which the model parameters are chosen such that two products are in and a third product is out of the relevant antitrust market. Using the data, they perform various price-based tests, including correlation, Granger causality, stationarity, and cointegration tests. The general findings are the following:

“We find that, in the absence of common cost shocks, price correlations can do a good job of determining which goods belong to the same market and which goods do not. On the other hand, in the presence of common cost shocks, price correlations do not perform as well, and not surprisingly tend to be over-inclusive (the relevant market is defined too broadly). However, even in the absence of common shocks, other price-based tests perform poorly. We find that, when the data is generated from a standard model of product differentiation, Granger causality, stationarity, and cointegration tests are unable to distinguish between the case where two goods are in the same market, and the case where they are not. In fact, our simulation results suggest that *these tests provide absolutely no meaningful information to antitrust practitioners* [emphasis added].”<sup>18</sup>

- 29) Consistent with the criticisms of price tests in the academic literature, the Horizontal Merger Guidelines of Brazil recognize that while price correlations over time may be considered in evaluating relevant markets, ultimately the hypothetical monopolist test must always be satisfied. “Other methods, such as crossed [sic] elasticity or the price correlation over time test may also be useful. However, regardless of the method used, the logic of the hypothetical monopolist test . . . must always be present.”<sup>19</sup>

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<sup>16</sup> G.J. Werden and L.M. Froeb, “Correlation, Causality, and All that Jazz: The Inherent Shortcomings of Price Tests for Antitrust Market Delineation,” *Review of Industrial Organization* 8 (1993): 329–53.

<sup>17</sup> P. J. Coe and D. Krause, “An Analysis of Price-Based Tests of Antitrust Market Delineation,” *Journal of Competition Law & Economics* 4, no. 4 (2008): 983–1007.

<sup>18</sup> P. J. Coe and D. Krause, “An Analysis of Price-Based Tests of Antitrust Market Delineation,” *Journal of Competition Law & Economics* 4, no. 4 (2008): 983–1007.

<sup>19</sup> SEAE/SDE Horizontal Merger Guidelines – Portaria n°50, August 2001, footnote 6.

## B.2. The cointegration test suggests that frozen and chilled pizza are in separate relevant markets

- 30) F&A finds a cointegrating relationship among three price series: frozen pizza, chilled pizza, and wheat flour. They interpret this result as evidence that frozen pizza and chilled pizza are in the same relevant market. However, their test results indicate that the relative prices of frozen and chilled pizza do not tend toward any given constant value, even in the long run, as would be expected in the case of close substitutes. In fact, because their results indicate that relative prices of frozen and chilled pizza are not stable over time, a more reasonable conclusion would be that chilled pizza is not in the same relevant market as frozen pizza in Brazil.
- 31) To see why this is so, consider that the specific long-run relationship that F&A found through cointegration analysis is as follows:

$$\log(p_{ref}) - 3.187 \log(p_{cong}) - 0.095 \log(p_{farinha}) \approx 0,$$

where  $p_{ref}$ ,  $p_{cong}$ , and  $p_{farinha}$  denote the prices of chilled pizza, frozen pizza and wheat flour respectively.<sup>20</sup>

- 32) Significantly, the coefficient 3.187 on the frozen pizza price is not close to one. As economists have pointed out in the academic literature, the cointegration relationship indicates a stable long-run ratio of prices for chilled and frozen pizza only if there is a coefficient of one on the logarithm of the frozen pizza price.
- 33) This fact has been recognized for some time in the literature on market integration, in which the goal is to examine evidence of a long run “law of one price” across different geographic or product markets. Asche, Gordon, and Hannesson (2004) argue that a coefficient of one is needed in a cointegration equation for the law of one price to hold.<sup>21</sup> Similarly, Barrett (1996) points out, “[u]nfortunately, cointegration is neither necessary, nor sufficient for market integration. . . . [T]he magnitude of the cointegration coefficient is informative about the relative rates of change, and many reported coefficients have magnitudes implausibly far from unity.”<sup>22,23</sup>

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<sup>20</sup> Fagundes & Associados, Market Definition Report, October 2009, fls. 1791.

<sup>21</sup> F. Asche, D.V. Gordon, and R. Hannesson, “Tests for Market Integration and the Law of One Price: The Market for Whitefish in France,” *Marine Resource Economics* 19 (2004): 195–210.

<sup>22</sup> C. B. Barrett, “Market Analysis Methods: Are Our Enriched Toolkits Well Suited to Enlivened Markets?” *American Journal of Agricultural Economics* 78 (1996): 825–29.

<sup>23</sup> Other authors similarly argue that the cointegration coefficient should be one to find a stable price relationship: David W. Walls, “A Cointegration Rank Test of Market Linkages with an Application to the U.S. Natural Gas Industry,” *Review of Industrial Organization* 9 (1994): 181–91; and J. Baffes and M. I. Ajwad, “Identifying Price Linkages: A Review of the Literature And An Application to the World Market of Cotton,” *Applied Economics* 33 (2001): 1927–1941.

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- 34) More recently, Forni (2004) proposed a simplified cointegration test for market definition that explicitly recognizes this issue. Forni argues that “a necessary condition for two products being in the same antitrust market is that the log of the price ratio is stationary.”<sup>24</sup> This condition is equivalent to cointegration of the logarithm of prices, but with a cointegrating vector of (1, -1). A recent note from Charles River Associates discusses well-known weaknesses of price correlation tests and advocates testing for the stationarity of relative prices instead, as in Forni’s test.<sup>25</sup>
- 35) The fact that the coefficient in the F&A cointegration equation for chilled and frozen pizza is greater than three and not close to one implies that the ratio of prices of these products does not tend towards any particular value over the long run.<sup>26</sup> This interpretation is confirmed by the limited data available on the price ratio, displayed in Figure 1, which reveal significant variation in the ratio. This is not what one would expect for the relative prices of close substitutes. So, while the cointegration test result is not directly informative about the hypothetical monopolist test in general, in this case it does suggest that frozen and chilled pizza are not very close substitutes and that they are most likely in separate relevant markets.

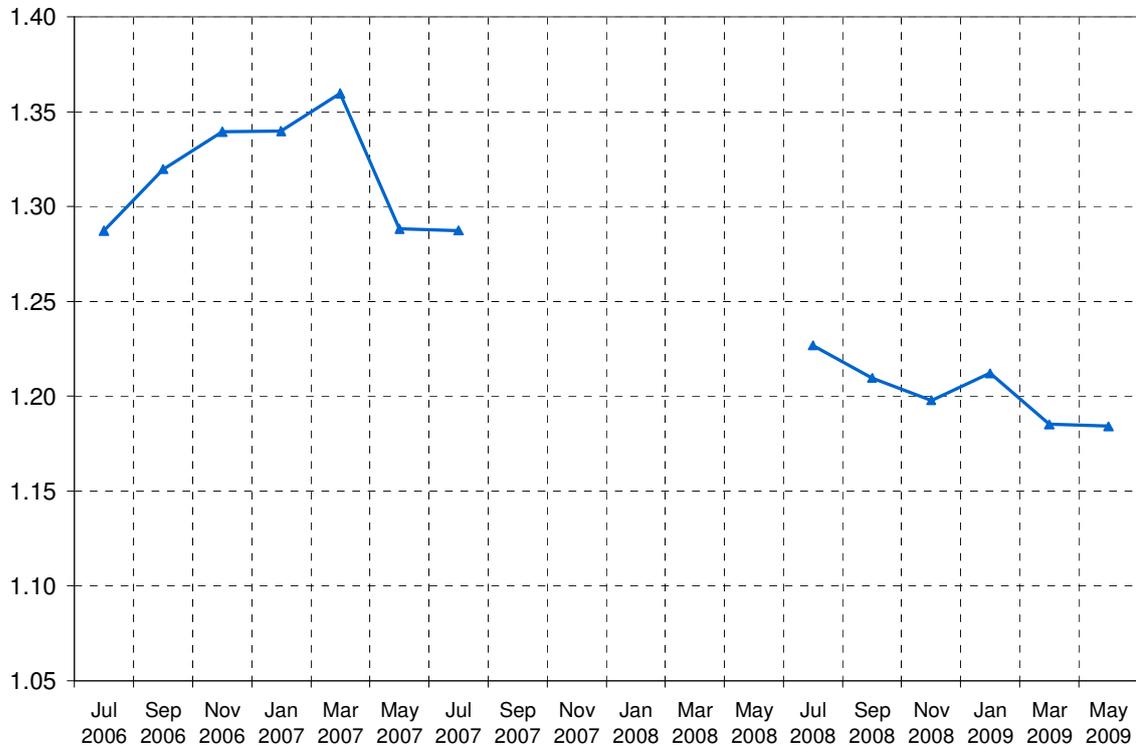
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<sup>24</sup> Mario Forni, “Using Stationarity Tests in Antitrust Market Definition,” *American Law and Economics Review* 6, no. 2 (2004): 441–63. Note that the Forni test, while an improvement on earlier cointegration tests, is still subject to most of the criticisms made by Werden and Froeb (1993).

<sup>25</sup> Charles River Associates (published originally by Lexecon Ltd), “Market Definition: How Stationarity Tests Can Improve Accuracy,” June 2001, [www.crai.com/ecp/assets/Stationarity\\_June2001.pdf](http://www.crai.com/ecp/assets/Stationarity_June2001.pdf).

<sup>26</sup> The standard error reported on the cointegration coefficient is 0.29, therefore, the coefficient is significantly different from one.

Figure 1. Ratio of average prices of frozen and chilled pizza in Brazil



Source: AC Nielsen

### B.3. Price time-series tests have not been successfully used to broaden relevant markets in Brazil

36) The F&A Market Definition Report cites four Brazilian merger cases and claims that time-series tests were applied for market definition purposes in analyses presented in front of the various competition agencies in Brazil (Sistema Brasileiro de Defesa da Concorrência).<sup>27</sup>

- Ato de Concentração No. 08012.011103/2005-91 – Gerdau Hungria Holding Limited Liability Company, CarpeDiem Salud S.L., Bogey Holding Company Spain S.L. e Corporación Sidenor S.A.
- Ato de Concentração No. 08012.010192/2004-77 – Votorantim Celulose e Papel S.A. e Ripasa S/A Celulose e Papel

<sup>27</sup> Fagundes & Associados, Market Definition Report, fls. 1774, footnote 18.

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- Ato de Concentracao No. 08012.001885/2007-11 – Owens Corning e Compagnie de Saint-Gobain
  - Ato de Concentracao No. 08012.010474/2007-17 – Electrovidro S.A. e Isoladores Santana S.A.
- 37) In all of these cases, F&A implemented various time-series tests, including cointegration tests and Granger-causality tests.
- 38) Despite F&A’s suggestion to the contrary, the record in these cases indicates that these types of tests are not viewed by the Brazilian agencies as definitive evidence for market definition. In none of the cases was passing a cointegration test sufficient to conclude that two products or geographic areas were in the same relevant market. Furthermore, Brazil’s antitrust agency, the Secretariat for Economic Monitoring (SEAE) identified numerous problems that might arise when these tests are used for purposes of market definition.
- 39) In the Gerdau case, the parties claimed (and SEAE agreed) that the data were not suitable to carry out time-series tests for purposes of market definition. In addition, SEAE noted that two price series could be cointegrated as a result of common cost structures (e.g., inflation), even if the products were unrelated. Both in the Votorantim case and in the Electrovidro case, SEAE noted that cointegration of prices, in itself, is not definitive evidence, and that additional factors needed to be taken into account to conclude that the two products or two areas belonged to the same relevant market. Finally, in the Owens Corning case, SEAE used the method proposed by Mario Forni for purposes of geographic market definition. As noted previously, the “Forni test” is considerably more stringent than the requirements of a cointegration test.
- 40) To summarize, in three of the four cases, F&A argued that the relevant market was global (i.e., it included both domestic and foreign producers). In each of these cases, SEAE rejected the parties’ claims and ruled that the market was national. SEAE accepted the parties’ claim for broader markets only one time: when it ruled in Electrovidro that two electrical isolators were in the same relevant product market. But even in that case, additional qualitative evidence was required to reach a conclusion about relevant markets.

### **C. The F&A analysis of demand and competitive effects is implausible and rests primarily on their modeling assumptions**

- 41) F&A estimates the aggregate price elasticity of demand for chilled and frozen pizza to be 3.426 and concludes that the relevant antitrust market is no smaller than all chilled and frozen pizza, because

this elasticity exceeds their estimated “critical elasticity” of 1.90.<sup>28</sup> They conclude that the relevant market must include other products as well. F&A also presents results from merger simulations that suggest very small price effects from the merger, and they present a closely related analysis that purports to demonstrate that only very small marginal cost savings would offset those price effects completely.

- 42) A merger simulation exercise was implemented to estimate the effects of the merger on the prices of the major pizza brands, private label pizza, and a catch-all category referred to as “others.” Using a logit demand model, F&A estimated that the prices for the brands of Perdigão and Sadia would increase by 0.06% and 0.05%, respectively. A similar analysis was undertaken to estimate the marginal cost reductions needed to keep postmerger prices at the same level as premerger prices (“Compensatory Marginal Cost Reduction”). F&A estimated that the compensatory reduction is 0.09% and 0.07% for Perdigão and Sadia, respectively. F&A presents the same simulation exercises using other demand models; in each case, the alternative model used demand elasticities that are matched to the substitution patterns obtained from their logit model. Therefore, each of these alternative analyses yields very similar results to the logit model.
- 43) This section shows that these results are implausible and are easily explained by arbitrary modeling assumptions made by F&A. Indeed, plausible alternative assumptions reverse F&A’s conclusions about relevant markets and the likely competitive effects of the merger.

### **C.1. The estimated demand elasticity for chilled and frozen pizza is implausibly large**

- 44) F&A states that the aggregate demand elasticity for chilled and frozen pizza is 3.426.<sup>29</sup> This figure is implausibly large for the aggregate elasticity of demand for a large category of consumer food items. It implies that consumers, in the aggregate, would significantly reduce their spending on frozen and chilled pizza in response to even a small coordinated price increase for all such products. In contrast, if households were simply to budget a fixed monthly expenditure for frozen and chilled pizza purchases, one would observe an aggregate elasticity of demand of about one.

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<sup>28</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, fls. 1998.

<sup>29</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, fls. 1995.

45) The estimated elasticity is inconsistent with published studies.

- Albuquerque and Bronnenberg (2009) found the own price elasticity of a single newly introduced pizza brand to be 3.07.<sup>30</sup> The aggregate price elasticity for a category of products is typically much smaller than the elasticity for a single brand.
- Van Heerde et al. (2004) estimate a log-log demand system based on weekly (April 1995 to December 1999) U.S. supermarket data on frozen pizza sales.<sup>31</sup> The analysis included the top seven national brands, which together accounted for 55% of all volume sales in the market. Own price elasticities for individual brands ranged between 1.54 and 4.79. Cross-price elasticities ranged between -0.21 and 1.02. Although the authors did not report an estimate for the aggregate elasticity of demand for all brands, it is possible to estimate a measure of this based on the reported own and cross-price elasticities and market shares. The estimated elasticity is approximately 1.03.
- Bergtold et al (2004) estimate a flexible and separable translog (FAST) multistage demand system to obtain demand elasticities for 49 different processed food categories and one composite good that includes “all other goods.”<sup>32</sup> They use scanner data from IRI, which covers supermarkets in 42 U.S. metropolitan areas from the first quarter of 1998 through the fourth quarter of 1992. With respect to the estimated own-price elasticities, they characterize their results as “fairly large” and “much larger in absolute terms than those reported in previous studies.” However, even the largest price elasticities are modest in comparison with the 3.426 value reported for pizza by Fagundes & Associados. Out of the 49 food categories, “Dry Soups” had the largest own-price elasticities in absolute value, with the values ranging between 2.04 and 2.08. Most own-price elasticities were considerably smaller. For example, own-price elasticities for two frozen food categories, “Frozen Vegetables” and “Frozen Fries and Onion Rings” were around 1.00 and 1.10, respectively. The categories “Ice Cream/Yogurt” and “Frozen Juices” had own-price elasticities below 1.00. Although pizza was not among the 49 food categories analyzed, there is no reason to expect that own-price elasticities for pizza would be substantially larger than all of the 49 analyzed categories.
- As pointed out by Bergtold et al (2004), own-price elasticities of different food categories obtained by previous studies are even smaller. For example, Huang (1996) reports estimates for

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<sup>30</sup> P. Albuquerque and B. J. Bronnenberg, “Estimating Demand Heterogeneity Using Aggregated Data: An Application to the Frozen Pizza Category,” *Marketing Science* 28, no. 2 (2009): 356–72.

<sup>31</sup> H. J. Van Heerde, C. F. Mela, and P. Manchanda P., “The Dynamic Effect of Innovation on Market Structure,” *Journal of Marketing Research* 41 (2004): 166–83.

<sup>32</sup> J. Bergtold, E. Akobundu, and E. B. Peterson, “The FAST Method: Estimating Unconditional Demand Elasticities for Processed Foods in the Presence of Fixed Effects,” *Journal of Agricultural and Resource Economics* 29, no. 2 (2004): 276–95.

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35 food categories, and all but one are smaller than 1.00 in absolute terms. The largest estimate (grapes) is 1.18, and this indicates that demand for food is typically inelastic.<sup>33</sup>

- The U.S. Department of Agriculture published a large-scale international study on the demand for major food categories. The “International Food Consumption Patterns Database” estimates food budget shares and income and price elasticities. It uses 1996 data for nine major consumption groups and eight food subgroups across 114 countries.<sup>34</sup> The results for Brazil are included in Table 1. These elasticities are all smaller than 1.00; this indicates that demand for food is typically inelastic in Brazil.

**Table 1. Own-price elasticities for various food categories in Brazil**

Commodity	Own-price elasticity
Beverages & tobacco	-0.70927
Breads & cereals	-0.32701
Dairy	-0.58059
Fats & oils	-0.34718
Fish	-0.60430
Fruits & vegetables	-0.43140
Meat	-0.53600
Other foods	-0.53419

Source: U.S. Department of Agriculture, International Food Consumption Patterns Database

- 46) The estimated elasticity is close to the theoretical maximum value implied by their model of consumer demand. F&A does not explain the exact methods by which they calculated the aggregate elasticity from the reported regression results. They may have used the elasticity implied by their logit model of demand,<sup>35</sup>  $\epsilon = \alpha \bar{p} s_0$ , where  $\alpha$  is the estimated price coefficient in the logit model,  $\bar{p}$  is the quantity-share-weighted average price for all pizza brands, and  $s_0$  is the share of the outside alternative in the potential market. By using prices and quantity shares from the F&A report, one can calculate that  $\bar{p} = 10.95$ .<sup>36</sup> The regression coefficient is reported to be  $\alpha = 0.316$ .<sup>37</sup> Therefore, the reported elasticity of  $\epsilon = 3.426$  is consistent with their model only if they assumed that the share of the outside alternative in the potential market is  $s_0 = 99.0\%$ . Obviously this value is already close to

<sup>33</sup> K. S. Huang, “Nutrient Elasticities in a Complete Food Demand System,” *American Journal of Agricultural Economics* 78, no. 1 (1996): 21–9.

<sup>34</sup> The database and the accompanying report, “International Evidence on Food Consumption Patterns,” are available at <http://www.ers.usda.gov/Data/Elasticities/>.

<sup>35</sup> See G. J. Werden and L. M. Froeb, “The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy,” *Journal of Law, Economics and Organization* 10, no. 2 (1994): 407–26. As explained below, it is not difficult to reproduce the Fagundes & Associados simulation results by using the data in their report together with this formula for the aggregate elasticity of demand.

<sup>36</sup> Fagundes & Associados, Compensatory Reduction in Marginal Cost (CRMC) Test Report, February 2010, Figure XXX and Figure XXXII, fls. 2138–2139.

<sup>37</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, Appendix III, fls. 2015.

its theoretical limit of 100%, and increasing the potential market size further would increase the aggregate elasticity of demand in the model by only a trivial amount, all else equal.

- 47) It is clear, therefore, that F&A made assumptions about the size of the potential market that produced close to the largest possible aggregate price elasticity of demand consistent with their assumed logit model and the market data. Indeed, total consumer purchases of all brands of chilled and frozen pizza make up less than 1% of the potential market sales in their model. For reasons discussed below, this assumption significantly influences their analysis of likely competitive effects from the merger and leads to implausible estimates of merger price effects.

## **C.2. F&A's model predicts implausible merger price effects**

- 48) According to data reported by F&A, the merged firm will have a combined share of sales of frozen and chilled pizza of 48%. Despite this large combined share, F&A predicts essentially no price effects from the merger. They also conclude that only trivial marginal cost reductions would be enough to mitigate any adverse price effects.
- 49) By using data and information from the F&A Technical Reports, it is not difficult to reproduce the simulated merger effects and critical marginal cost reduction (CMCR) findings for pizza in their Technical Report. As explained previously, it is possible to infer the initial share of the “outside” good that they used. This can be used together with the reported market shares and prices to calibrate remaining unreported parameters of their assumed logit model. Simulations based on a logit model calibrated in this fashion reproduce the results in the Technical Reports almost exactly.
- 50) In fact, by using this approach, one can establish that the F&A model predicts that a merger of the five largest firms selling branded frozen and chilled pizza would not produce significant price effects even in the assumed absence of entry.<sup>38</sup> This hypothetical merger would create a firm accounting for more than half of all frozen and chilled pizza sales. However, as shown in Table 2, the merged firm would raise no price by as much as 0.5% in the F&A model.

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<sup>38</sup> The simulation model aggregates all products of each of the five largest premerger firms into five corresponding individual aggregated products. Smaller brands and private label are aggregated into two corresponding products. Because the latter products represent aggregations of independent sellers, the model is not capable of accurately predicting the price responses of the smaller firms or private label sellers. Therefore, the model implicitly holds prices constant for private label pizza and for smaller brands grouped into the “other” category. Larger price effects (either for the actual merger under review or for a hypothetical merger of all of the major brands) might occur if sellers of private label or smaller brands found it in their interest to raise prices following a price increase by the major brands, for example, if the major brands provide pricing leadership in the market. Also, the simulation model assumes that the major brands do not profit from increased sales of private label pizza. To the extent that the major brands profit from wholesale sales to private label sellers, they will have incentives to raise prices by a larger amount than the model predicts, because they will profit from increased diversion to private label.

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**Table 2. Price effects of a merger of all five major firms in the F&A model**

Company	Price change
General Mills (Frescarini)	0.140%
Massa Leve	0.136%
Mezzani	0.198%
Perdigão	0.076%
Sadia	0.062%

Source: Bates White calculations based on Fagundes & Associados Technical Reports.

### C.3. F&A's modeling assumptions explain their implausible findings

- 51) The implausible findings on merger price effects in the F&A analysis of pizza demand are easily explained by their arbitrary use of a logit model of consumer demand for pizza, together with their assumption that actual sales of all brands of frozen and chilled pizza collectively account for only about one percent of potential sales for these products. As previously discussed, it is possible to infer the share of the “outside” alternative in the F&A model by using their reported prices, quantity shares, regression coefficients, and aggregate demand elasticity. The implied value exceeds 99%. In other words, their model assumes that total actual sales of all brands of frozen and chilled pizza together account for only about 1% of the potential market for these products.<sup>39</sup>
- 52) Using the calculated outside share, one can adjust the quantity shares reported by F&A to obtain shares of their assumed potential market for pizza. These shares are displayed in Table 3. Notably, the largest single firm, Sadia, accounts for less than 0.25% of the potential market under their assumed model.

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<sup>39</sup> F&A present their assumptions underlying the calculation of the size of the total market and the share of the outside alternative. Due to a lack of access to the F&A data, it is not possible to exactly reproduce their calculations. Following the F&A assumptions and using Nielsen data from a later period would yield an estimated outside share of approximately 93%. However, the figure used by F&A was almost certainly larger than this. As previously discussed, it is possible to infer the share of the “outside” alternative in the F&A model. It is approximately 99%. Using this outside share yields merger simulation results that match almost exactly those reported by F&A, which gives high confidence that it is the number they used.

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**Table 3. Market shares in the F&A Logit model of pizza demand**

Company	Share of actual unit sales reported by Fagundes & Associados	Actual unit sales as a share of the potential market for chilled and frozen pizza
General Mills (Frescarini)	1.58%	0.02%
Private label	3.51%	0.03%
Massa Leve	1.60%	0.02%
Mezzani	0.96%	0.01%
Others	44.11%	0.43%
Perdigão	23.08%	0.22%
Sadia	25.16%	0.24%
Outside alternative		99.03%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>

Source: Bates White calculations based on Fagundes & Associados Technical Reports.

- 53) The very large “outside” share in the F&A model explains their implausibly small estimates of the price effects of the merger. The unilateral incentive to raise prices following a merger arises because some of the sales that are lost when the price of one of the merging parties’ products is increased may be recaptured after the merger as some consumers switch to the products of the merger partner. The greater the diversion of sales to the partner’s products, the greater will be the incentive to raise price after the merger. A well-known property of the logit model is that when the price of a single product is increased, sales divert away from that product to each of the other products in proportion to the shares of the other products in the potential market. Therefore, in the F&A logit model for pizza, whenever any one producer of chilled or frozen pizza raises its price, almost all (more than 99%) of the sales that it loses are diverted to the outside alternative rather than to the products of other firms in the market.
- 54) This means that F&A, through their use of a logit model with a very large outside share, have, in effect, assumed that there is virtually no competition among individual firms within their proposed market of chilled and frozen pizza. Instead, almost all of the competition faced by firms (and thus the only source of restraint on pricing) comes from the outside alternative. To verify this, one can calculate the own and cross-price elasticities of demand for the five firms that are modeled individually in their analysis. These are reported in Table 4. As can be seen, the elasticity of demand for Perdigão products with respect to Sadia’s price in the model is only about 0.01, implying that Sadia would need to raise prices almost 100% in order to create a 1% increase in Perdigão’s unit sales. The cross-price elasticity between the merging firms in the other direction is even smaller. These small cross-price elasticities are a direct implication of the very large share assigned to the outside alternative in the logit model,<sup>40</sup> and they explain why F&A predicts almost no effect from the merger.

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<sup>40</sup> Cross-price elasticities of demand in a logit model are proportional to the share of the potential market held by the

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**Table 4. Own and cross-price elasticities of pizza demand among individual firms.**

	General Mills (Frescarini)	Massa Leve	Mezzani	Perdigão	Sadia
General Mills (Frescarini)	3.50390	0.00056	0.00023	0.00831	0.01031
Massa Leve	0.00054	3.60184	0.00023	0.00831	0.01031
Mezzani	0.00054	0.00056	2.50881	0.00831	0.01031
Perdigão	0.00054	0.00056	0.00023	3.70785	0.01031
Sadia	0.00054	0.00056	0.00023	0.00831	4.21777

Note: Rows denote the quantities demanded for firms, and columns denote prices for firms.

Source: Bates White calculations based on Fagundes & Associados Technical Reports.

- 55) The logit model has often been criticized in the academic literature because of the strong restrictions it places on the relationship between market shares and substitution patterns, which are readily apparent in Table 4. For example, Werden and Froeb (1994) report as follows:<sup>41</sup>

“The logit model is based on the restrictive assumption known as Independence of Irrelevant Alternatives (IIA). This assumption implies that when the price of one product is increased, consumers switch to other products in proportion to the relative shares of those products. Actual preferences, however, may yield very different substitution patterns, because certain goods may be viewed as closer substitutes than others.”

- 56) It follows that in the F&A model, the outside alternative (which implicitly includes home delivery pizza and other non-pizza products) is *assumed* to be the next best substitute for each individual brand of frozen or chilled pizza, for virtually all consumers, because the model assumes a share close to 100% for the outside alternative. That is, they have assumed that in response to a price increase for their most preferred brand most consumers would stop buying chilled or frozen pizza altogether rather than switch to another brand. They offer no empirical evidence in support of this assumption. It is an artifact of their very strong assumption about the potential market size together with their assumption that demand follows a logit model.
- 57) The sensitivity of merger simulations using a logit model to the assumed size of the potential market is described in the academic literature.<sup>42</sup> The fact that a very large assumed outside share can lead to

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product whose price is increased. Because no firm has more than a tiny share of the potential market in the Fagundes & Associados model, all of the cross-price elasticities are very small.

<sup>41</sup> G. J. Werden and L. M. Froeb, “The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy,” *Journal of Law, Economics & Organization* 10, no. 2 (1994): 1407–1426. See also a discussion in J. Hausman, G. K. Leonard and J. D. Zona, “Competitive Analysis with Differentiated Products,” *Annales d’Économie et de Statistique* 34 (1994): 159–80.

<sup>42</sup> See, for example, D. Huang, C. Rojas and F. Bass, “What Happens When Demand is Estimated With a Misspecified Model?” *The Journal of Industrial Economics* 56 (2008): 809–39.

implausible results in a logit model has also been recognized in the literature. Nevo (2001) points out as follows:<sup>43</sup>

“[S]ince the market share of the outside good is very large, relative to the other products, the substitution to the inside goods will on average be downward biased. As I show below this could lead to the wrong conclusions of conduct in this industry.”

- 58) To be clear, it is the *combination* of the assumption about the size of the potential market together with the mathematical form of the logit model that creates the implausible substitution patterns in the F&A analysis. The potential market size in a logit model should not be thought of literally as the number of units of pizza that might be sold under some set of circumstances.<sup>44</sup> Instead, the potential market size in a logit model should be chosen to match evidence about the aggregate elasticity of demand. Werden and Froeb (1994) point out as follows:<sup>45</sup>

“There are several reasons for making [the aggregate elasticity] rather than [the outside share] a primitive of the model. First, economists are accustomed to dealing with demand elasticities, so the underpinnings of a merger simulation will be better understood if an assumption is made with respect to [the aggregate elasticity] rather than [the outside share]. Second, discrete choice models are not designed to estimate the implied aggregate demand elasticity. It is, therefore, preferable to estimate that elasticity by using aggregate data and the corresponding econometric tools. We link the aggregate demand estimation with the discrete choice estimation by choosing the value for [the outside share] that is consistent with the aggregate estimate of [the demand elasticity]. In our models, [the outside share] is not really a probability at all but rather a scaling factor used to achieve this consistency.”

- 59) Fagundes & Associados also present findings using other demand models, including the Constant Elasticity System (CES) and the Almost Ideal Demand System (AIDS). In each case, the alternative model uses demand elasticities that are calibrated to those obtained from their logit model. Therefore, each of these alternative analyses suffers from the same basic flaws as their analysis using the logit model, because they are based on the same implausible assumptions about consumer substitution patterns.

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<sup>43</sup> A. Nevo, “Measuring Market Power in the Ready-to-Eat Cereal Industry,” *Econometrica* 69, no. 2 (2001): 307–42.

<sup>44</sup> Note that actual sales closely approach potential sales in a logit model only if the prices of all products (other than the outside alternative) become infinitely negative. In this case, that would literally mean paying all consumers very large sums of money to buy pizza instead of other products, until no consumer is willing to purchase additional pizza. However, this bizarre hypothetical scenario has little to do with normal consumer behavior relevant for merger analysis.

<sup>45</sup> G. J. Werden and L. M. Froeb, “The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy,” *Journal of Law, Economics & Organization* 10, no. 2 (1994): 407–26.

## C.4. F&A's findings are reversed under plausible changes in their assumptions

- 60) To demonstrate that the conclusions of the F&A Technical Reports are sensitive to the assumed potential market size and that the data are consistent with a finding of significant merger price effects, it is useful to consider a range of more plausible aggregate elasticities of demand. Starting with the F&A estimate of 3.426 and considering a range of smaller aggregate elasticities of demand, one can infer from these elasticities a more reasonable range of values for the outside share, following the approach suggested by Werden and Froeb (1994) in the paragraph previously quoted.

**Table 5. Merger simulations with a range of assumed aggregate elasticities of demand**

Assumed <sup>46</sup> aggregate elasticity	Premerger outside share	Merger price change for Perdigão	Merger price change for Sadia	CMCR for Perdigão	CMCR for Sadia
3.426	99.03%	0.066%	0.053%	-0.090%	-0.070%
2.0	57.81%	3.230%	2.582%	-5.661%	-4.399%
1.5	43.36%	4.563%	3.637%	-8.792%	-6.851%
1.0	28.91%	6.060%	4.816%	-12.925%	-10.103%
0.5	14.45%	7.763%	6.154%	-18.486%	-14.503%
0.1	2.89%	9.313%	7.371%	-24.407%	-19.209%

Source: Bates White calculations based on Fagundes & Associados Technical Reports.

- 61) Table 5 shows a range of elasticities, the corresponding outside shares,<sup>47</sup> simulated merger price effects, and Critical Marginal Cost Reductions (CMCR) for each of the assumed aggregate elasticities. It is clear from this exhibit that even if all other features of the F&A logit model are taken to be correct, the assumption of a very large outside share is needed for the model to predict almost no price effects and trivially small values for the CMCR measures. In fact, if the aggregate demand for chilled and frozen pizza is 1.0 or less, then the merger simulation predicts that prices for the parties' products will increase by 5% or more on average; the marginal cost savings needed to avoid these effects would exceed 10%.
- 62) The parties provide no separate evidence about the aggregate elasticity of demand. However, indirect evidence is available from information on margins. F&A based their critical elasticity calculations on confidential information about the actual margins of the merging companies.<sup>48</sup> While these margins are not reported in the public version of their Technical Note, they do report a critical elasticity of

<sup>46</sup> The first elasticity of 3.426 is from Fagundes & Associados, "Critical Elasticity and Critical Loss Test Report," November 2009, fls. 1995.

<sup>47</sup> The price sensitivity parameter  $\alpha$  is held fixed at the value from the Fagundes & Associados regression model in these simulations. The intercepts of the model are recalibrated so that the model matches shares of the potential market for each assumed aggregate elasticity.

<sup>48</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, fls. 1996.

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1.90 using an assumed iso-elastic demand and a 5% SSNIP.<sup>49</sup> Using the formula for the critical elasticity in the Technical Note,<sup>50</sup> this implies an actual margin of approximately 50%. If the Fagundes & Associados logit model is to be used to predict merger price effects, it should predict a similar margin in the premerger data. It does not.

**Table 6. Margins implied by the F&A model with various assumed aggregate elasticities**

Assumed aggregate elasticity	Implied pre-merger outside share	Margin for Perdigão	Margin for Sadia
3.426	99.03%	27%	24%
2.0	57.81%	30%	26%
1.5	43.36%	31%	28%
1.0	28.91%	32%	29%
0.5	14.45%	34%	30%
0.1	2.89%	35%	31%

Source: Bates White calculations based on Fagundes & Associados Technical Reports.

- 63) Table 6 shows the implied premerger margins for Sadia and for Perdigão over the same range of elasticities and outside share assumptions as in Table 5, based on the same simulations. Notably, the smallest elasticity in the last row of the Table implies margins of 31% and 35%; these are closer to 50% than are the margins in the first row, which corresponds to F&A's reported elasticity of 3.426. Therefore it is most appropriate to use a very small aggregate demand elasticity in the F&A model, if it is used at all. Referring back to Table 5, this in turn implies that expected merger price effects are large.

### **C.5. F&A's model improperly makes no distinction between frozen and chilled pizza**

- 64) The merging firms sell only frozen pizza and do not sell chilled pizza. Putting aside F&A's claims about the relevant market, there is no question that pizza is a differentiated product within their proposed market. However, F&A's model makes no distinctions between chilled and frozen pizza within the alleged market. It is reasonable to assume that different brands of frozen pizza are better substitutes for each other than are brands of chilled pizza. To the extent that this is true, F&A's failure to account for this differentiation within the proposed relevant market certainly biases their conclusions. In particular, actual merger price effects are most likely larger than their model predicts, even when a more realistic assumption is made about the aggregate demand elasticity.

<sup>49</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, Figure 14, fls. 1997–1998.

<sup>50</sup> Fagundes & Associados, Critical Elasticity and Critical Loss Test Report, November 2009, Figure 2, fls. 1988.

- 65) In fact, the smallest margins in Table 6 are considerably less than 50% (the value implied by F&A's critical elasticity claims); this indicates that the model is missing important features of the competitive environment even when very small aggregate elasticities are assumed. In fact, the model is incapable of generating margins as great as 50% for the merging firms without further modification. Most likely this is due to the fact that it ignores product differentiation within the alleged relevant market and therefore fails to fully capture the similarity and degree of competition present between the merging firms' products.

#### **D. F&A's analysis does not support a relevant market broader than frozen pizza**

- 66) In their Market Definition Report, F&A claims that "it cannot be excluded" that home delivery pizza and "pizza bought in rotisseries" are also part of the same relevant market that includes frozen and chilled pizza. At the same time, F&A acknowledges that "it was not possible to test this hypothesis."<sup>51</sup>
- 67) In their Critical Elasticity Test and Critical Loss Test Report, F&A claims that "it is possible to conclude . . . that the market for frozen and chilled pizza must be broadened" to include other products such as home delivery pizza. In the report, they present econometric evidence to support the claim. In particular, they argue that since the estimated aggregate elasticity for pizza (frozen and chilled) is greater than the critical elasticity needed for a price increase of 5% to be profitable, the relevant market must include other products.
- 68) F&A's sole justification for the inclusion of chilled pizza in the same relevant market as home pizza is their Critical Elasticity Test. Based on this test, they conclude that the market must be even broader, including products such as home delivery pizza or restaurant pizza. Their test depends critically upon their conclusion that the aggregate demand elasticity is large. As already pointed out in Section C.1, F&A's estimate of aggregate elasticity is implausibly large and is driven entirely by their assumption that actual sales of chilled and frozen pizza make up no more than one percent of potential sales in their logit model. Based on the logic explained in Section C.1, assuming an outside share of 50% in the F&A model would lead to an aggregate elasticity of approximately 1.73; this would reverse the results of the Critical Elasticity Test. And as explained in Section C.5, even this estimate of the aggregate elasticity is based on a model that is unreliable because it fails to make any distinctions at all between chilled pizza and frozen pizza.

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<sup>51</sup> Fagundes & Associados, Market Definition Report, fls. 1791.

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- 69) If the market for frozen pizza does not include chilled pizza, then it is likely that it does not include home delivery pizza either, because the latter would appear to be a closer substitute to chilled pizza than to frozen pizza based on product characteristics such as “freshness.”
- 70) F&A’s conclusion that the relevant market should also include pizza delivered through home delivery, pizzerias, or distribution channels other than the ones used to distribute frozen pizza are entirely speculative and not consistent with market evidence. For example, based on their public disclosures, Perdigão and Sadia do not view home delivery companies or pizzerias as major competitors.
- In its Annual Reports, Perdigão regularly discloses its market share in the frozen pizza category.<sup>52</sup> It is notable that the category in which Perdigão calculates its market share is frozen pizza not “frozen and chilled pizza” or “pizza.” The fact that sales of home delivery pizza, restaurant pizza, and chilled pizza are omitted from these calculations suggests that Perdigão does not consider these in the same category as frozen pizza.
  - Relative to Perdigão, Sadia discloses in its Annual Reports less detail about the competitive landscape. Sadia reports its market share in the frozen food segment,<sup>53</sup> which includes frozen pizza but excludes any other types of pizza.
  - Throughout Perdigão’s and Sadia’s Annual Reports, from 2005 to 2009, there has been no mention of home delivery as a substitute for frozen pizza. In fact, there is no mention of home delivery as a substitute for any type of frozen food at all.
- 71) The largest frozen pizza producers in the United States do not view home delivery companies or pizzerias as major competitors. The U.S. frozen pizza market is dominated by a few large companies, such as Nestlé (formerly Kraft), Schwan’s, and to a lesser extent General Mills (formerly Pillsbury). A review of the Annual Reports and SEC filings for the two publicly traded frozen food companies (Nestlé/Kraft and General Mills) does not indicate that the frozen pizza industry views home delivery as a direct competitor.
- 72) In previous cases, antitrust agencies in Brazil ruled that the delivery channel plays an important role in delineating the relevant product market. In the AMBEV case, SEAE defined beer sold through different delivery channels as distinct products. In particular, the SEAE decision opinion states the following:

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<sup>52</sup> For example, Perdigão, Annual Report, 2008, p. 22.

<sup>53</sup> Sadia, Annual Report, 2008, p. 35.

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“Another segmentation of the market refers to the sales point. Beer sold cold – bars and restaurants – are distinct products from beer sold warm in super and hypermarkets. In fact, the price differences between these two products may reach 30%.”<sup>54</sup>

Antitrust authorities in Europe and in the United States have taken a similar approach, deciding that the delivery channel plays an important role in the determination of product market boundaries. For example, when reviewing the proposed merger between Dr. Oetker and Schwan, the U.K. Office of Fair Trading ruled that the relevant product market was frozen pizza. While the official decision explicitly excluded chilled pizza, it did not even mention home delivery pizza or restaurant pizza.<sup>55</sup>

In the Nestle/Schöller case, the European Commission ruled that there were four separate relevant markets, corresponding to four different delivery channels of ice cream. One of these relevant markets was “take-home” ice cream (i.e., ice cream sold via food retailers to private households).<sup>56</sup>

### E. Entry analysis

- 73) The main conclusion of F&A’s Entry Report is that entry is easy in all of the markets they considered.<sup>57</sup> Most of the supporting evidence has been redacted. The main economic analysis presented by F&A seems to be a cost-benefit analysis of entry. Essentially, the costs of entry are compared to the likely profits (e.g., “sales opportunities”) of a hypothetical entrant. The report describes, among other things, the following entry costs: (1) costs of production plants and (2) costs of distribution centers. However most details are redacted.
- 74) F&A’s conclusions about ease of entry are at odds with available information about the costs and challenges of obtaining distribution and brand acceptance in many parts of Brazil and with Dr. Oetker’s own experience entering the Brazilian market.
- 75) Sales opportunities for a new entrant might be seriously limited by a lack of brand recognition.<sup>58</sup> Owning an established brand is an important element of success in the marketplace in Brazil. Sadia is one of the most recognized brands in Brazil.

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<sup>54</sup> Ato de Concentracao No.08012.005846/99-12 – Antarctica e Brahma, SEAE Report, at paragraph 40.

<sup>55</sup> Office of Fair Trading decision, ME/4033/09 -- DrOetker/Schwan, May 5, 2009

<sup>56</sup> European Commission merger decision COMP/M.2640 – Nestle/Schöller, February 25, 2002, at paragraph 17.

<sup>57</sup> Fagundes & Associados, Entry Report, January 2010, fls.1700–1742.

<sup>58</sup> It has been recognized in the economics literature that product proliferation (a strategy by which an incumbent firm blankets the market with new products to appeal to the different tastes and preferences that different consumers might have) could act as a barrier to entry. In other words, an incumbent could corner the right niches in the product space. See for example, R. Schmalensee (1979), “Entry Deterrence in the Ready-to-Eat Breakfast Cereal Industry,” *Bell Journal of Economics*, Vol 9: 305-27; R. Schmalensee (1982), “Product Differentiation Advantage of Pioneering Brands,” *American Economic Review*, Vol. 72(3): 349-65

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- 76) Access to a distribution network is critical for success in the business of selling frozen pizza. Sadia and Perdigão have a dominant position in frozen-food distribution. An earlier report prepared in this case by Bates White points out that frozen-food distribution services are scarce in several regions of Brazil and that Sadia and Perdigão are the only two frozen-food distributors that can supply efficient services to retailers throughout Brazil.<sup>59</sup>
- 77) An effective frozen-food distribution network in Brazil consists of distribution warehouses and a network of refrigerator trucks. Assembling a distribution network is costly. Besides Sadia and Perdigão, there are no other parties capable of nationwide distribution of frozen food. A major reason for the lack of frozen food distributors could be that the dominant suppliers of frozen food, Sadia and Perdigão, largely rely on their own distribution networks. Therefore, no potential operator finds it profitable to enter the frozen food distribution business.
- 78) Sadia and Perdigão rely on their own distribution network and on exclusive contracts with third parties in selling their products to retailers. The distribution centers are either owned by the company or leased from third-party owners. In addition to its own distribution network, Perdigão has contracts with third-party distributors. The primary transportation method is trucks; rail and maritime shipping is used to a much lesser extent. The truck fleet is not owned by either of these companies. Transportation is generally outsourced to a large number of third-parties. Both of the two networks are sufficiently large to serve the entire country. These facts are confirmed by the merging parties' public documents. The following evidence is available from Sadia's public documents:
- "Within the Brazilian market, Sadia sells its finished products through its own distribution network to wholesale and retail outlets, as well as to institutional clients and food services clients. . . . Sadia's distribution strategy in Brazil is focused on selling directly to customers rather than selling to large distributors that then resell the products. This strategy avoids concentration among a few large purchasers."<sup>60</sup>
  - "Sadia uses trucks as the primary method of distributing its products in Brazil. The Company's distribution system is handled by a network of approximately 2,500 third-party refrigerated vehicles of different sizes, for both long- and short-range deliveries, which directly service more than 300,000 points of sale directly throughout Brazil."<sup>61</sup>
  - Sadia's 2008 20-F Report lists the company's distribution and commercial centers and the corresponding region of activity. Based on the list of locations, essentially, the entire country is

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<sup>59</sup> Bates White, *The Proposed Combination of Sadia and Perdigão – An Antitrust Analysis*, August 26, 2009, at paragraph 23.

<sup>60</sup> Sadia, Form 20-F, p. 56 (July 8, 2009).

<sup>61</sup> Sadia, Form 20-F, p. 57 (July 8, 2009).

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covered, including the North, Northeast, Central, South, Southeast, and the Federal District. Ten centers were owned, and 13 were leased.<sup>62</sup>

79) Similar evidence is available from Perdigão's public documents.

- “The Company covers approximately 98% of the Brazilian population through a nationwide distribution network, which the Company distributes its products. We cover substantially all of the Brazilian population through a nationwide distribution network.”<sup>63</sup>
- “Our domestic distribution network uses 28 distribution centers in 13 Brazilian states and the Federal District. Refrigerated trucks transport our products from our processing plants to the distribution centers and from the centers to our customers. We have 38 cross-docking points in several areas of the country that enable us to unload products from large refrigerated trucks onto smaller trucks or vans for transportation to our customers. We own 20 of our distribution centers and lease the remaining eight centers. We do not own the vehicles used to transport our products, and we contract with several carriers to provide this service for us on an exclusive basis. In some areas of the country, we act through nine exclusive third-party distributors.”<sup>64</sup>
- In addition to the 28 distribution centers that Perdigão owns or leases, the company has contracts with third-party distributors that operate 19 other distribution centers. The network covers the entire country.<sup>65</sup>

80) Dr. Oetker entered the Brazilian market in September 2009. The scale of entry was initially limited to the state of São Paulo, but the plan was to eventually sell frozen pizza in the entire country. Dr. Oetker was aware of the fact that access to a distribution network is critical in being successful in the business.<sup>66</sup> There are basically three ways for a manufacturer to supply retailers: (1) direct sales, often through a “logistic partner,” (2) distributors, and (3) wholesalers.<sup>67</sup>

81) After a careful market study, Dr. Oetker identified only three potential logistic partners in the entire state of São Paulo. Two of these companies (LogFrio and Friozem) operate in and around the city of São Paulo; the operation of the third company (Frigodal) is limited to an affluent city in the Northeastern region of the state of São Paulo (Ribeirão Preto). No potential logistic partner was found that would serve either the central or the western parts of the state.<sup>68</sup>

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<sup>62</sup> Sadia, Form 20-F, p. 64 (July 8, 2009).

<sup>63</sup> Perdigão Annual Information filing to the Brazilian Securities Commission, 2008, p. 68.

<sup>64</sup> Perdigão Annual Information filing to the Brazilian Securities Commission, 2008, p. 68, 71.

<sup>65</sup> See map, Perdigão, Annual Report, 2008, p. 43.

<sup>66</sup> Document titled “CADEcarta2 (3).docx”

<sup>67</sup> Bates White, The Proposed Combination of Sadia and Perdigão – An Antitrust Analysis, August 26, 2009, at paragraph 14.

<sup>68</sup> Document titled “CADEcarta2 (3).docx”

- 82) In the delivery of its non-frozen (“dry”) products, Dr. Oetker works successfully with a network of distributors and is able to supply most of the country. However, it is difficult to find frozen-food distributors. Dr. Oetker was able to identify only one very small distributor (Nevera) that operated in the greater São Paulo metropolitan area. Even this distributor serves only parts of the metropolitan area. Dr. Oetker identified three distributors (Arezzo, Pazotti, and Ice Foods) that operate in various other parts of the state. However, there was no potential distributor to be found in large parts of the state, including some parts of the greater São Paulo metropolitan area, the South Coast of the state, and the western region of the state.<sup>69</sup>
- 83) As explained in our earlier report, there are several means that BRF might use to raise the cost of entry or to induce supermarkets to discriminate unfavorably against smaller competitors and new entrants. First, because BRF will control frozen pizza distribution in most states in Brazil either through its exclusive contracts with regional distributors or its own network in many parts of the country, BRF is likely to raise rivals’ costs of getting their product to retailers. Second, with its broad portfolio of frozen pizza and frozen processed food products, BRF will use market power arising from its economies of scale and scope in merchandising to disadvantage smaller rivals through freezer-space allocation, decisions about brand positioning within the freezer or the store, or decisions about breadth of product line carried. Third, BRF might make up-front payments or offer lower wholesale prices to supermarkets to obtain their agreement for favorable shelf positioning or other practices that would give BRF a competitive advantage over smaller manufacturers. Fourth, BRF might even sign exclusive agreements with supermarkets that, under some circumstances, could be profitable both to BRF and to the supermarkets, but which could have the effect of raising barriers to entry and raising the price of frozen pizza. Finally, BRF may offer loyalty discount programs to supermarkets incentivizing them to promote or sell BRF brands exclusively.

## F. Remedies

- 84) Reiterating the recommendations of our earlier report, to prevent anticompetitive effects of the merger, one may consider possible structural and behavioral remedies, including the following:
- Require BRF to divest some of its frozen pizza brands
  - Require BRF to divest its store brand pizza
  - Require BRF and supermarkets to allow third-party suppliers to distribute their products

In its recently issued opinion, SEAE suggests two alternative remedies. The first alternative includes the temporary licensing of a major brand (Sadia or Perdigão), while the second includes the

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<sup>69</sup> Document titled “CADEcarta2 (3).docx”

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divestiture of some of the minor brands owned by the companies (including two pizza brands, Batavo and Rezende).

- 85) While these remedies are appropriate, they do not address the competitive concern that access to distribution (or lack thereof) represents. Therefore, we strongly recommend behavioral measures in addition to the structural measures. In particular, CADE should consider behavioral remedies that will prohibit BRF from discriminating against rivals on price or non-price terms as a supplier of distribution services, or in its contracts and agreements with supermarkets. Any remedy must ensure that BRF's competitors will have sufficient access to distribution channels on competitive terms. In particular, we recommend remedies that would require BRF, third-party distributors in exclusive contract with BRF, and supermarkets to share distribution channels (including access to freezer space) with third-party suppliers of frozen pizza on competitive terms.
- 86) These behavioral remedies are broadly in line with previous decisions in Brazil, the United States, and in the EU in related consumer goods industries.
- 87) CADE has historically ordered divestitures and access to distribution channels in mergers where the applicants overlapped in many national markets for production and distribution of consumer products. Our first report describes various CADE decisions where this was the case. It is worth reiterating some of these cases, due to the fact that similar concerns exist in the Sadia/Perdigão matter.
- 88) In the 1999 merger between Antarctica and Brahma, which created AmBev, the leading beer maker in Brazil and South America, CADE found that “[g]ood distributors were scarce in many parts of the country, and it would be difficult to persuade small retailers to carry an additional brand of beer.”<sup>70</sup> The agency’s remedy included the divestiture of a brand (“Bavária”) and five regional breweries, and gave the purchaser access to AmBev’s distribution system for 4 to 6 years. In addition, AmBev was obliged to open its distribution system to a third company for 4 years and exclusivity agreements were forbidden.
- 89) CADE has approved with restrictions the 2007 merger of Grupo Abril and Fernando Chinaglia Distribuidora subject to an agreement with Grupo Abril to divest some printing assets, to transfer associated technology, to supply distribution for the divested operations for three years and not to enter exclusive contracts with selling points.<sup>71</sup>
- 90) When investigating other cases, CADE similarly found that maintaining access to distribution to competing suppliers was crucial to preserve competition. These precedents include the 2008 acquisition of Cintra by AmBev, the 2004 license agreement between Pepsico and AmBev, and the

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<sup>70</sup> Ato de Concentração No. 08012.005846/99-12, CADE Decision, March 22, 2000; see also OECD (2003) Roundtable on Merger Remedies – Note by Brazil (SEAE), at 8, [http://www.seae.fazenda.gov.br/document\\_center/papers-and-articles/2003/roundtable-on-merger-remedies-seae.pdf](http://www.seae.fazenda.gov.br/document_center/papers-and-articles/2003/roundtable-on-merger-remedies-seae.pdf).

<sup>71</sup> Ato de Concentração No. 08012.013152/2007-20, CADE Decision, November 11, 2009

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2004 merger between Nestlé and Garoto (this transaction was blocked); all of them are discussed in our first report.

- 91) In the US, courts have sometimes struck down contracts between retailers and leading brands that require retailers to devote a percentage of shelf space to the leading brand that is greater than its market share. For example, in 1998, Philip Morris implemented a retail merchandising program under which it made large sums of payments called “retail display allowances,” under the condition that retailers devote a significant percentage of their above-counter display space to Philip Morris brands. There were several “tiers” of the program among which retailers could choose. The court found that most retailers chose one of the two highest level tiers, corresponding to either 75% or to a 100% of the above-counter display space devoted to Philip Morris brands. Meanwhile, the retail market share of Philip Morris within the United States was approximately 53%. The court decided that Philip Morris’s practices were anti-competitive and it granted Plaintiffs’ joint motion for a preliminary injunction.<sup>72</sup>
- 92) In 2000, the Canadian Competition Bureau brought a case in the baby food industry challenging the use of slotting allowances by Heinz Canada, the dominant manufacturer. The principal anti-competitive practices uncovered by the investigation included large, lump sum, up front payments made to retailers not to stock non-Heinz Canada jarred baby food and infant cereal, multi-year contracts for exclusive supply, and discounts conditional upon exclusive supply. Following settlement negotiations with the Bureau, Heinz Canada voluntarily signed a binding undertaking designed to enhance the competitive climate for jarred baby food and infant cereal in Canada.<sup>73</sup>
- 93) European authorities similarly pay close attention to the competitive effects of dominance that extends to both production and distribution. In the late 1980’s, Mars, one of the world’s largest confectioners, decided to expand into the impulse ice-cream market. The dominant firm in Europe at the time was Unilever, with close to 70% market share. Unilever maintained exclusivity arrangements with retail outlets regarding the space in freezers provided by Unilever, but this exclusivity often extended to the whole store. In 1991, Mars brought a legal challenge against Unilever’s exclusionary practices in Germany.<sup>74</sup> In March 1992, the EC granted an interim decision against store exclusivity, allowing Mars to place products in all outlets, including Unilever’s freezers. In its decision, the EC stated that Unilever’s deals “substantially restrict access to the market” and that Mars “would suffer serious and irreparable damage.” In December 1992, the EC reaffirmed the ruling that exclusivity agreements violate EU law.<sup>75</sup> Unilever appealed, but in February 1993 the European Court of Justice

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<sup>72</sup> R.J. Reynolds Tobacco Co. v. Philip Morris Inc., 60 F. Supp. 2d 502 (M.D. N.C. 1999)

<sup>73</sup> See “Heinz Canada Signs Undertaking Regarding Jarred Baby Food and Infant Cereal,” (press release) (August 1, 2000), available at <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/00570.html>

<sup>74</sup> More precisely, Mars brought, at the same time, two parallel legal challenges against the two major German ice-cream makers, Langnese-Iglo (subsidiary of Unilever Germany) and Schöller.

<sup>75</sup> European Commission decision, Case IV/34.072, December 23, 1992.

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rejected the appeal in regards to store exclusivity. In 1996, Mars brought a similar case against Unilever, this time in Ireland. In 1998, the EC ruled in favor of Mars, forcing Unilever to share its freezers.<sup>76</sup> Unilever appealed. In 2003, the European Court of First Instance denied Unilever's appeal.<sup>77</sup> Unilever appealed again. In 2006, the European Court of Justice found there were no valid legal grounds to appeal the ruling, putting an end to the legal battle.<sup>78</sup>



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Luis Cabral, Ph.D.

July 22, 2010

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Date

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<sup>76</sup> European Commission decision, Case 98/531/EC, March 11, 1998.

<sup>77</sup> Judgment of the Court of First Instance (Fifth Chamber), Case T-65/98, October 23, 2003.

<sup>78</sup> Order of the European Court of Justice (Sixth Chamber), Case C-552/03 P, September 28, 2006.