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ECONOMIC ANALYSIS IN MERGER INVESTIGATIONS – Contribution from Colombia

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More documentation related to this discussion can be found at: oe.cd/mergerinv.

Please contact Mr James Mancini if you have questions about this document [James.Mancini@oecd.org].

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Economic Analysis in Merger Investigations

The role of economic analysis in Colombian merger appraisal

- Contribution from Colombia -

This contribution describes the role of economic analysis for Colombian merger reviews as provided by merger law and its guidelines. We present how economic considerations factor into merger assessment and into the decisions taken by the Superintendence of Industry and Commerce. This document also provides case studies to show some specific methodologies adopted by the Superintendence for economic analysis in its review.

1. General overview – on capacity

1. In 2011 the OECD's Competition Committee studied the relevance of economic analysis for merger review in its Best Practice Roundtable on *Economic evidence in merger analysis*. It was stated then that the relevant questions raised during merger review require empirical answers, hence, the need to analyze each case within a coherent economic framework. This is the general convergence on the role of economic analysis for merger review. The Superintendence of Industry and Commerce (hereafter, SIC) applies economics in merger control, its merger working group is led by an economist and most of its members are economists. Every case involves both a legal and an economic appraisal conducted by lawyers and economists all through the administrative proceedings; however, the economic analysis is dominant.

2. Role of economic analysis in merger review – applications

2. As noted by the Secretariat in the call for contributions for the present discussion, economic analysis is at the heart of merger appraisal because it provides the tools to grasp and interpret evidence when assessing theories of harm and most importantly because it guides competition agencies towards sound decision making when evaluating complex markets.

3. The analysis conducted by the SIC when assessing mergers is dynamic and flexible in nature and it builds on a case by case effort to employ different techniques, whether basic or more sophisticated, to achieve a better empirical understanding of the possible anticompetitive effects of a proposed transaction in a relevant market.

4. In this section we present some types of quantitative techniques employed by the SIC in merger review. We identify the key elements of the case, the relevant problem, the criteria used by the team to select the most suitable economic method, the analysis and the challenges faced.

2.1. Types of quantitative analysis employed in merger review – criteria used by the authority to select suitable techniques

2.1.1. Case Terpel-Disco

5. The case concerns the merger between Organización Terpel S.A. (Terpel) and Distribuidora Colombiana De Combustibles S.A.S. (Discco). The merger consisted in the acquisition by TERPEL of the right to usufruct a specific service station -"El Saman de Zaragoza" (EDS EL SAMAN)-, including the assets necessary to operate the supply of liquid fuels.

6. The intervening parties participated in a number of segments of the value chain of liquid fuels derived from oil. TERPEL as a wholesale and retail distributor of such products, and DISCCO as a retail distributor through its EDS EL SAMAN. According to the activities developed by the interveners, the relevant markets in the proposed transaction corresponded to (i) wholesale distribution of regular gasoline; (ii) wholesale distribution of diesel; (iii) retail distribution of regular gasoline; and (iv) retail distribution of diesel.

7. In previous decisions related to liquid fuel distribution markets, the SIC defined the wholesale distribution of petroleum-based liquid fuels (regular gasoline, extra gasoline, and diesel) as including the storage, handling, and wholesale dispatch of such fuels, since wholesale distribution is unlikely to occur if agents do not have the necessary infrastructure (either their own or leased) to store the fuel and supply it to their clients from there. It also concluded that the relevant geographic market for the wholesale distribution of liquid fuels was national.

8. However, based on the provisions established in the current regulations of the sector applicable at the time of the review, the SIC found that wholesale distributors that did not have their own supply plants would depend on the surplus capacity of their competitors that had the respective infrastructure, within the northern, eastern, central, central-western, south-western and central-southern regions. For the SIC, the above-mentioned condition could be seen as a geographical entry barrier, limiting the geographical market vision of the wholesale distribution activity of liquid fuels derived from oil which, as indicated, in previous decisions had been considered of national scope.

9. Thus, in order to verify whether the dimension of the wholesale distribution market could be of lesser scope, the SIC issued a requirement to the agents participating in the wholesale fuel distribution market, in which it asked them specifically if they considered it viable to provide liquid fuels to EDS located throughout the national territory and in particular to those located near the area of Cartago-Valle in the short term, and, finally, if they considered that there were legal and/or economic barriers to the distribution of liquid fuels at the wholesale level throughout the Colombian territory.

10. The SIC gathered all the necessary information to re-evaluate the dimension of the geographic market for the wholesale distribution of liquid fuels through requests of information to the Ministry of Mines and Energy, to competitors and clients. According to the answers provided, the geographic market for the wholesale distribution of liquid fuels could be of lesser scope, mainly for reasons of costs and geographic conditions. So, to determine whether the geographic scope of the wholesale liquid fuels distribution market would continue to be of a national range or if it could instead comprise different areas of the country, the SIC took information on prices, sales and the geographic location of each of the fuel storage plants on a monthly basis for the period from January 2016 to December 2018. The above information was recovered from the Fuel Information System - SICOM and ArcGis (R) for the case of the location coordinates of the plants.

11. The SIC relied on the information collected to apply the hierarchical cluster methodology suggested in the study "*Methodology for the definition of relevant markets in the wholesale and retail distribution activities of liquid fuels in Colombia*", by the Colombian Commission for the Regulation of Energy and Gas - CREG. This methodology of hierarchical clustering applied to an index, consists of calculating sets in a hierarchical manner, to ensure that each of the plants belongs to a single grouping, using the simple link as an approximation method. This is done from calculated distances, taking into account the following variables as inputs: (i) the coordinates (x,y) corresponding to the location of the plant; (ii) the weighted average prices of current gasoline per plant; and (iii) the weighted average prices of diesel; all the above standardized.

12. As a result of the index, a Euclidean distance is obtained, which is then submitted to the hierarchical cluster to ensure that each department (geographic unit) belongs to a single set. Finally, the non-parametric Mann-Whitney-Wilcoxon test was applied to determine the number of clusters that generated statistically significant differences and that allowed establishing that the differences between the clusters were sufficient to state that each one corresponded to a geographic market. It was found that the wholesale market for the distribution of liquid fuels can be divided into thirteen (13) geographic markets.

13. The main challenges of this exercise included:

- The plant location variable corresponded to the coordinates x, y. However, the analysis could be improved by including a variable that considers the geographical conditions of the different departments of the plant. For example, the travel time from the plant to the main cities of the departments.
- The standardized weighted average price variables are from the entire period analyzed. However, in order to keep the market definition updated, an indicator could be included to give a greater weight to the prices of the most recent years with respect to the older data.
- It is necessary to verify the exercise from time to time because the regulation issued by the Ministry of Mines and Energy can generate rapid changes in the proposed market definition that are not captured with the data used.
- An additional challenge was to find an instrumental variable that could be used to build cross-elasticity between the clusters in order to verify if the dimension was adequate.

2.1.2. Case Pepsicola – Postobón

14. The merger transaction between Pepsicola Colombia Ltda. and Postobón S.A. consisted of the transfer by Pepsi of the franchise agreements (including the exclusivity, brand licensing and exclusive bottling agreements) of the Gatorade and Lipton Ice Tea products to Postobón, which were produced in the Colbesa S.A. plant in the municipality of Caloto, Cauca.

15. The parties involved were simultaneously participating in the production and marketing of Ready To Drink (RTD) isotonic beverages (sports drinks) and in the production of tea-based beverages (RTD). There was also a vertical relationship, as the participants were involved in various links of the chain (production and marketing). In particular, in the isotonic beverages RTD market, the Superintendence found a high share of participation by one of the companies involved in the planned operation. For this reason, it considered it appropriate to carry out a more detailed qualitative and quantitative analysis -statistical and econometric- to determine the degree of substitutability between Gatorade

and the other isotonic beverages, as well as the expected effect on prices per milliliter in the face of possible integration.

16. The Economic Studies Group (EEG) within the SIC evaluated the possible impact that could result from the merger in the market in question, particularly between Gatorade and Squash products. The assessment of the possible effect on competition and the main variables of the isotonic beverage market was carried out based on two components: the first, corresponded to a descriptive analysis of the behavior of the price and quantity sold variables as indicative of the dynamics and contestability of the market. The second, to an econometric exercise conducted by the team to estimate the elasticity of the demand (own and crossed), as well as the expected effect on prices per milliliter in view of the possible integration.

17. To have a comparable presentation between the different brands that would be representative of the dynamics of each firm, we took as a reference of the exercise the 500ml PET presentation.

Descriptive analysis:

18. Based on the information provided by the required firms, i.e. Pepsi, Postobón, Aje Colombia S.A. and The Coca Cola Company (Industria Nacional de Gaseosas S.A.), the EEG analyzed the dynamics of the price per milliliter of each of these firms in the period July 2012-December 2013. They found that while Powerade, Sporade and Squash (products of their competitors) presented significant variations and oscillations in the reported price levels, Gatorade maintained a constant trend during the period analyzed. This situation would be indicative of a dynamic that is relatively independent of the prices reported by Gatorade in relation to what was observed with the other products in the market.

19. Similarly, when analyzing the quantities placed in the market (in milliliters) for the presentation of 500ml PET for each of the products under study, they found that although a relatively stable price was observed for Gatorade, the demand did reveal important variations but that they differed in any case from the behavior presented by the demand for the other products analyzed. In contrast, Powerade, Sporade, and Squash showed a direct response in the quantities sold to the observed price variations. When estimating the correlation coefficient between prices and sales volumes (in milliliters), they found that the sales behavior of the Gatorade product shows the lowest level of correlation with respect to what was observed in prices, while the demand for other products such as Powerade and Squash is much more sensitive to what was observed in the price variable.

20. Based on these results, the EEG concluded that the price and demand dynamics of Gatorade were apparently independent of those observed in the other products analyzed. While the prices of Powerade, Squash and Sporade showed significant oscillations, the price of Gatorade remained stable. In addition, the demand response for Powerade, Squash and Sporade was more closely correlated to the price series than Gatorade, which could be preliminarily related to a reduced elasticity of Gatorade to price changes and a behavior apparently independent of that reported for other products in the isotonic beverage market. Therefore, they proceeded to make an econometric exercise in order to estimate the elasticities (own and cross price) of the demand for these products.

Econometric exercise

21. The EEG carried out the estimation of 3 econometric models following the methodology of Berry (1994), and Björnerstedt and Verboven (2013). However, due to the endogeneity problems that could occur when making the estimation by incorporating directly the price variable, they chose to use 3 possible instrumental variables available in the data that the SIC was holding and made for each model an estimate of the possible variation in prices derived from the merger.

22. In model No. 1 they employed the variable "valor_botella_r" as an instrument. According to the results obtained, they concluded that the effect of the proposed merger in the isotonic beverages market would be reduced in terms of price increases. In model No. 2 they employed the variable "number of 500ml PET bottles" as an instrument. The results obtained in this model showed a higher price elasticity of demand than those observed in model 1, but they coincided in a low cross price elasticity and a reduced expected variation in prices as an effect derived from the merger analyzed. Finally, in model No. 3 they employed the variable "500ml PET bottles" as a tool. With this model they concluded that the merger would not generate significant upward pressure on prices, as a result of a reduced cross-price elasticity and a high price elasticity of demand.

23. After the descriptive analysis and the econometric exercise that was carried out, the SIC concluded that there were no indications of a possible exploitative effect, explained by the non-existence of upward pressure on prices as a result of the possible merger between Pepsi and Postobón. In this regard, Gatorade presented a behavior independent of that reported by the other products analyzed. While the latter showed significant variations, the price per milliliter of Gatorade remained stable. They also consistently found that the price elasticity of demand is greater than 1 in the three models analyzed, which indicates that the demand for the products analyzed is sensitive to price variations. However, the SIC determined that the demand for the good j does not respond in the same way to variations in the prices of other goods, since the cross elasticity in the three models was close to 0.

24. As a result of these qualitative exercises carried out by the GEE, the SIC concluded that, within the analysis of the merger, the isotonic beverages market would be subdivided into two (2) segments: (i) a premium segment composed of the product Gatorade and, (ii) a segment of regular isotonic beverages, which included the products Squash, Powerade and Sporade. The main challenge in carrying out this exercise was to obtain the necessary information from all market players.

2.2. Experience using surveys – challenges and best practices

25. The SIC has carried out surveys in some cases, such as the mergers between Nestlé - Pfizer (infant milk formula market); Bodytech - Gimnasios EnForma (gym market), and TERPEL - K-Saval (wholesale and retail distribution of liquid fuels markets). To carry out a good survey, the SIC has taken into account the following considerations: (i) the survey should not be too long; (ii) preferably include closed, independent questions that do not influence the respondent to give a certain answer; and (iii) choose a suitable sample. Among the main challenges that the SIC has faced with the use of surveys are the cost of carrying them out by SIC officials (for example, travel costs to different areas of the country) and the lack of officials to carry them out.

2.3. View on the optimal approach to quantitative analysis

26. The SIC uses different quantitative analyses in the analysis of mergers. The choice of methodologies used depends on the degree of complexity of the operation analyzed. Thus, in order to make an initial evaluation of the effects that could be derived if the projected operation is carried out, the SIC uses simple quantitative methods that allow the evaluation of market concentration. Among such methods are the estimation of market shares, as well as the calculation of concentration, asymmetry and dominance indexes. It is important to keep in mind that these methodologies are not conclusive with respect to the effects that a merger has on free competition in a given market, since they ignore the specific dynamics of the markets analyzed, such as barriers to entry and exit to the market. For this reason, the Competition Authority analyzes the results obtained in accordance with other factors present in each market in order to make the decision to approve the operation or continue with an in-depth analysis.

27. For the SIC it has been particularly useful to incorporate quantitative analysis to define the relevant markets in different cases. The method chosen always depends on the need of the Competition Authority, the market being analyzed, the information available and the time available to carry out the exercise. Among the quantitative methods that the SIC has used to define relevant markets are (i) price correlations of products in a period of time; and (ii) estimation of own and cross price elasticities to determine whether two products are substitutes and are part of the same market. Additionally, it is important to note that recently the SIC conducted a hierarchical cluster analysis on an index to determine the geographic market scope of the liquid fuel wholesale distribution activity.

28. On the other hand, the SIC in some cases has performed econometric analysis to determine the effect that the proposed merger would have on prices. Specifically, in the case of the merger between PROTABACO and COLTABACO, a panel data model was estimated taking into account monthly data for the 15 main cities of Colombia in the period between April 2003 and March 2009 for the most distinctive brands in the lower-middle segment, which represent 79.1% of this segment. The results obtained allowed us to conclude that the estimated 4% effect on prices would be greater than 6.3 times the average variability of the real prices of the brands in the lower-middle segment that was presented in the period from January 2000 to March 2009. This result, together with other factors analyzed, allowed the SIC to conclude that the operation analyzed would significantly obstruct competition in the national cigarette market.

2.3.1. Role of economists and involvement in qualitative analysis – insights and methodologies

Economic techniques to place evidence in context

29. The economists of the Merger Review Working Group are in charge of the analysis of all the operations that are reported to the Superintendence of Industry and Commerce. They are the ones who determine, based on the analyses carried out (qualitative and quantitative), if an operation can be approved in a first phase or if on the contrary it is necessary to carry out a more in-depth analysis in order to make a decision.

30. As previously illustrated, the economists of the Merger Working Group use different tools within the analysis they make of the merger operations that are presented to the SIC. At first, the analysis that is carried out consists mainly of qualitative analysis and simple quantitative analysis, which generally includes the determination of the relevant market, the calculation of market share quotas and the calculation of concentration, asymmetry and dominance indexes. In those cases in which it is necessary to carry out a more in-depth analysis of the proposed merger, the economists in charge of studying it, together with the Coordinator of the Merger Working Group and the Deputy Superintendent for Competition Protection, and in some cases, with the support of the SIC's EEG, determine the techniques and tools that will be used to analyze the operation, depending on the conditions and characteristics of each case. As it could be noted above, those econometric techniques include estimation of elasticities, merger simulations and the use of UPP tests, among others.