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ROUNDTABLE ON THE ROLE AND MEASUREMENT OF QUALITY IN COMPETITION ANALYSIS

-- Note by Chile –

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ROUNDTABLE ON THE ROLE AND MEASUREMENT OF QUALITY IN COMPETITION ANALYSIS

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1. Introductory Remarks

1.1. Towards a conceptual framework

1. Although economic theory traditionally has explained allocative efficiency problems in terms of price effects, it also acknowledges that businesses may compete on variables other than price. The traditional approach does not mean that competition on other variables is less relevant for competition analysis.

2. Reducing the analysis to the price variable is a way of making the presentation and understanding of economic models simpler. In most cases, the conclusions may be extrapolated to other variables.

3. For instance, oligopoly models usually assume that firms maximize profits by taking into account that demand is inversely dependent on prices. However, it is perfectly possible to conceive, in a competition model, situations in which product demand is a function of quality,[1] besides price. These quality attributes will be associated with specific production costs, which are chosen by the firms. Maximization of benefits by the firm could then be achieved through the selection of product quality and price. [2-3]

4. Thus, the economic analysis of cartel, dominance and merger cases -which usually considers product prices, and price increases- in most instances could be extrapolated to the effects on quality beyond prices.

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1 Unless specified, 'quality' is understood here as those products' attributes valuable for consumers and that cannot be subsumed under price, commonly appreciated under a static framework.

2 The aforementioned could be expressed as follows. In a typical oligopoly model, a firm's profits are expressed as:

> (p-c)□Q(p), where "p" is the product price, "c" are variable costs and "Q(p)" is product demand. In the context of price and quality competition, the profit function just expressed could be transformed to the following: (p-x-c) □Q(p,x), where "x" is a cost related with product quality.

3 Notwithstanding the aforementioned, it is worth pointing out that demand reaction is not necessarily the same when facing different competitive attributes, thus it is not clear whether facing a given reduction in quality-associated-production-costs would be equivalent to a price increase in the same magnitude. Either way, consumer welfare effects from either quality impoverishment or price raise would reduce the number of transactions relatively to a competitive scenario.

1.2 Markets in which products' quality is a relevant competitive variable

5. In many markets, product quality can have significant effects on demand and on consumer welfare.[4] Indeed, in many cases, a firm's "product" is the very experience provided to customers. This is particularly the case with service firms (restaurants, banks, cinemas, telecommunications, healthcare providers, airlines, etc.)[5] and with retail firms, where the service is the distribution of goods.[6]

6. Similarly, quality turns out to be a relevant competitive attribute in markets with differentiated product, where the brand is an important asset for companies. In most of these cases, part of the competitive intensity is expressed in 'vertical differentiation' (*i.e.*, offering different levels of quality at different prices).

1.3 Role of quality in competition analysis

7. Taking as an example, in market definition, the traditional hypothetical monopolist test could in principle be applied similarly if the crucial variable was quality, mildly altering the test: could a hypothetical monopolist reduce quality-associated-production-costs by 5-10% in a profitable and non-transitory way?

8. Likewise, the approach of the direct competitor in assessing market effects, particularly the use of the *upward pricing pressure* (UPP) test could also be implemented if diversion ratios that result from marginal changes in product quality could be estimated. Similarly, in conduct cases, lessening of products' quality could be a basis for a theory of competitive harm.

9. The FNE's internal guideline on horizontal merger analysis follows the insights above when stating that "[i]t is possible for the merged entity … either alternatively or together, to increase prices, to reduce output, **quality** or variety of products, or to alter some other competitive variable…" This statement is complemented in a footnote, which expressing that "[i]n what follows, when the expression 'capacity to raise prices' is used, the capacity to alter any of the competitive variables mentioned must be considered included".[7]

2. Relevant cases

10. Competition authorities in Chile have some experience with markets in which product quality is a relevant competitive variable that factors in the substantive analysis, including health care services, advertisement agencies, telecommunications and media, and aftermarket or follow-on services. Some of these considerations have been raised in enforcement cases, and others in market studies. However, with the exception of a merger case in the cinemas industry (discussed below), in which the FNE was able to

4 See Chamberlin, Edward H. (1933). The Theory of Monopolistic Competition. Cambridge Mass: Harvard Univ. Press; Robinson, Joan (1933) The economics of imperfect competition. London: Mc Millan and Company.

5 See Douglas, Georges and Miller, James (1974). Quality Competition, Industry Equilibrium, and Efficiency in the Price-Constrained Airline Market. The American Economic Review, Vol. 64, No. 4 (Sep., 1974), pp. 657-669.

6 See Ellickson, Paul B (2006). "Quality Competition in Retailing: A Structural Analysis," International Journal of Industrial Organization, 24(3): 521-40.

7 The FNE's merger guideline is available here: http://www.fne.gob.cl/english/wp-content/uploads/2013/01/Guia-fusiones-traducida-final-2.pdf, p. 7

quantify merger effects on service quality, most references to quality in substantive analysis of competition cases are incidental.

2.1 Cinemundo/CineHoyts merger case

11. In 2011, Chilefilms, a holding company that owned the Cinemundo cinema chain, which was the third largest actor in the national markets (with a 17% market share), took over CineHoyts, the nation's second largest chain (with a 30% market share). The combined Cinemundo/CineHoyts became the market leader with a 47% share, surpassing the former leader, Cinemark, which had a 38% market share. A third national chain, Movieland, had a 9% market share, while the remaining 6% is comprised of small independent chains, none of which holds over 1.5% market share.

12. The FNE learned about the Cinemundo/CineHoyts transaction after its consummation. Since competition among different cinemas is local, the FNE analyzed the transaction's risks to competition in each of the geographic markets in which Cinemundo and CineHoyts cinemas were overlapping, with a focus primarily on unilateral effects. The economic assessment involved several econometric tests aimed at evaluating the transaction's effects on prices and quality. Quantitative analysis showed that the most significant unilateral effect involved harms to service quality, a conclusion that was consistent with the qualitative data collected in the investigation.[8]

13. In order to assess impact on quality, the FNE focused its inquiry on operational costs, assuming that at least some of these are strongly linked to the cinemas' efforts aimed at providing better service. During the investigation, industry executives had identified the following as some of the differentiating factors of cinemas chains: duration of waiting periods in queues for buying an entry ticket or concessions stands; theater cleanliness; availability of air conditioning; sound and image quality; screen size; and availability of additional services, among others.

14. On the basis of the aforementioned, the FNE used the level of expenses in human resources in each cinema complex on the grounds that this cost was (i) comparable among cinemas chains, (ii) directly linked to the quality of customer services, (iii) a highly variable cost, as showed by the data, (iv) consistently identified by industry executives in the interviews as a competitive variable.

15. The main identification strategy used for the estimation of the regressions was comparing the competitive variables (ticket prices and actual expenses in costs) with the distance to the nearest competitor. Since, in three geographic areas, the transaction resulted in the suppression of the nearest competitor, the distance to the nearest competitor increased, thus allowing the merging firm to augment ticket prices and/or reduce expenses in costs.

16. The definition of geographic relevant market was not crucial for performing the analysis, since a direct analysis on the basis of the distance to the nearest competitor and the impact of the change in this distance on the concerning competitive variables could be performed.

17. The second identification strategy was a natural experiment, examining the effects of a past structural change in a local area. In December 2008, a cinema complex Cinemundo entered into the Estación Central neighborhood in Santiago, locating its facilities 300 meters from the incumbent, CineHoyts. This event provided information on the intensity of competition from Cinemundo for

8 In using quantitative analysis, the FNE aimed at supporting its effect-based approach in merger analysis, and followed best practices that had been discussed in the context of the OECD and ICN conferences and workshops.

CineHoyts. A 'difference in differences' method was followed[9], using as a control variable the others cinema complexes of the sample. A virtue of this approach was that it allowed assessing the intensity of competition on a market specifically affected by the transaction, and not just the average effect expected by a distance to the nearest rival increase, as in the first approach. Time dummy variables and fixed effects were also used in this approach.

18. The outcomes of the regressions, regarding the price variable, consistently showed that ticket prices were affected by competition. However, the magnitude of the intensity of competition on prices was quite low. In what follows, the analysis regarding the quality variable is detailed.

Quality competition

19. The basic model for assessing effects on quality used as a dependent variable the actual expenses in salaries in each cinema complex (in the natural logarithm), and as explanatory variables, the distance to the nearest rival in kilometers. The model is also controlled by the number of people attending each complex (in the natural logarithm)[10] and fixed effects are included for each complex (aimed at controlling by the features specific to the complexes during the entire period), as well as time effects (in order to isolate all the variables affecting all the complexes at the same time).[11]

20. In column 2, the variable of interest used in the econometric analysis is the distance to the nearest complex divided by its number of screens. Thus, this variable considers as a significant competitive pressure not only the distance to the nearest rival but the number of theaters in the nearest complex as well.[12]

21. The next chart shows the estimated parameter of interest with each of the above described models. In the interest of length, parameters associated with attendance, fixed effects, and transitory effects are not showed. In all the specifications below, robust standard errors are used.

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9 This method is a technique used for quantifying impacts of a given policy or event taking place at some point in time. By and large, the technique compares the change on a defined variable of interest, before and after the policy or event under analysis, for two samplers: a group on which a 'treatment' is applied and a control group without that 'treatment'. The aim of the analysis is to identify the differences in changes between the treated group vs. the control group.

10 In order to solve a potential endogenity problem (*i.e.* a rise in the wages of the workers should produce a rise in the attendance to the cinemas, but an increase of the cinema attendance could produce a rise in the expenses in wages), the method of instrumental variables was used. The attendance variable, delayed in 12 months, was considered a good instrument because it had a high correlation with the dependent variable and it was not related with the error term.

11 In order to check robustness of results we tried alternative mechanisms for measuring monthly attendance which are not presented in this document, but are available under request. The results of these alternative specifications were consistent with original results presented in this document.

12 A rise in the wages of the workers should produce a rise in the attendance to the cinemas, but an increase of the cinema attendance could produce a rise in the expenses in wages. Therefore, there is an endogeneity problem because of the reverse causality.

Effect of distance to rivals over the expenses in salaries

	Variable of Interest	
	(1)	(2)
	Distance to the nearest rival	Distance/screens
Coefficient	-0.0172***	-0.0529**
Standard Deviation	-0.00443	-0.0214
Obs.	1.079	1.079
R^2	0.918	0.918

(*) Robust Standard Errors, in parenthesis *** p<0.01, ** p<0.05, * p<0.1

(**) Data of the companies, monthly frequency, from January 2005 to March 2012

22. As shown in the chart above, regressions indicate that for each additional kilometer of distance to the nearest competitor, expenditures on salaries declines on average between 1.6-1.8%, these parameters are statistical significant at 99% of statistical confidence in all the specifications performed. Coefficients shown in column 2 are statistically significant on at least 95% of statistical confidence and of the expected sign.

23. In order to predict the effect of the transaction on salary expenses and with the aim of providing a range of magnitude regarding the reduction on this expense a simulation was performed. Using as a basis all the parameters that were statistically significant with 99% confidence, each variable associated with these parameters was evaluated, in the number of average monthly attendants in 2011 for each complex where the elimination of the nearest competitor takes place due to the transaction.

Effect of distance to competitors on salary expenses

Complex	Monthly average of attendants 2011 (thousands of people)	Δ (kms.) distance after the transaction	Estimation on Δ of expenses on salaries (service quality) (%) after the transaction
Cinemundo Plaza Alameda	23,3	6,8	-11%
Cine Hoyts Paseo Estación	56,6	6,9	-11%
Cine Hoyts La Reina	139	2,6	-7%

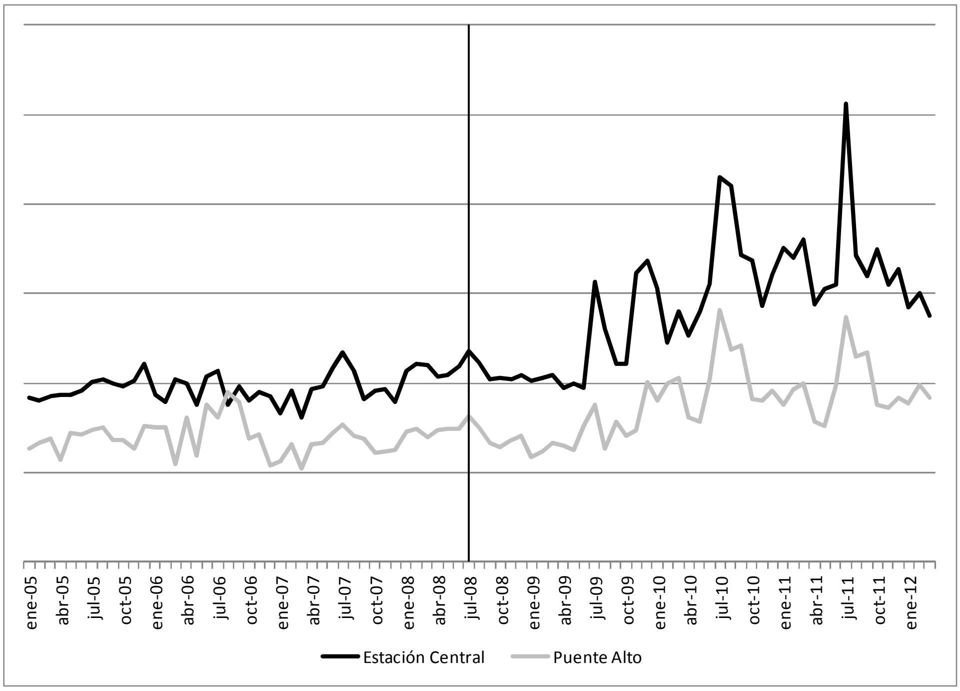
24. In the cases of Cinemundo Plaza Alameda and CineHoyts Estación Central, it was illustrative to review the consistency between the analysis described above and the assessment of the effects of the 2008 entry of Cinemundo in Estación Central. The 'difference in differences' method was used with fixed and time effects. The basic model used as a dependent variable used in the econometric analysis is the current expense on salaries in each complex (the natural logarithm) and as an explanatory variable, in order to identify the effect of Cinemundo's entry, the dummy variable "Plaza Alameda", which takes a value 1 for Hoyts Estación Central complex, in the period after the entry of its rival in mall center Plaza Alameda.

25. All the coefficients associated with variable 'Plaza Alameda' are statistically significant with 95% statistical confidence. The observed effect of the entry was an increase in expenditures on salaries between 13% and 22%.

26. It is informative to graphically illustrate the effect of Cinemundo's entry into Plaza Alameda on (Estación Central) CineHoyts' operational costs, excluding film rental, concession stands, location rental, advertising, and costs of commercial activities independent of film exhibition. The behavior of this

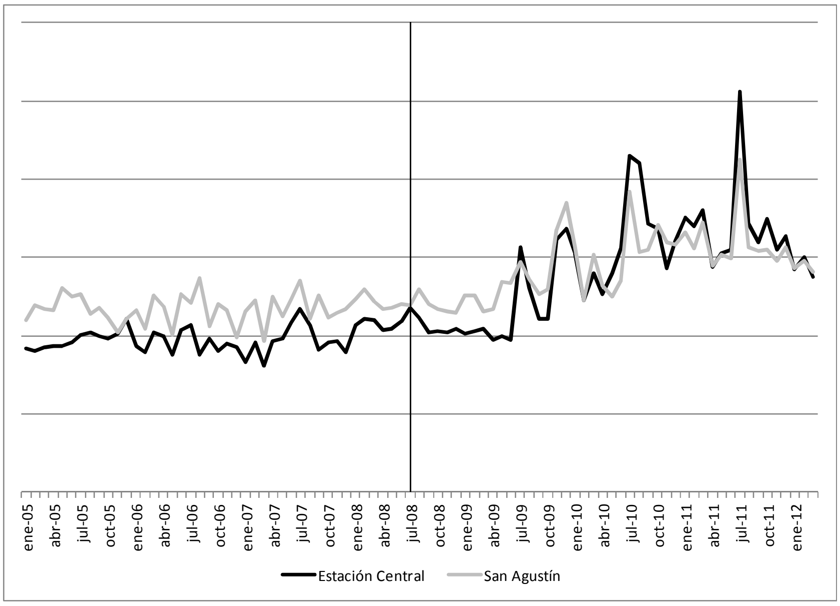
complex is compared with other CineHoyts complexes (San Agustín and Puente Alto), which operation costs, excluding those costs not linked with the service quality, are equivalent and comparable. The increase in CineHoyts Estación Central's operational costs over the comparable costs, according to this complex's CEO, was explained as a business strategy aimed at increasing service quality and thus attracting higher audience.

Actual operational costs, excluding costs not associated with service quality in CineHoyts Estación Central and Puente Alto complexes



Source: Company

Actual operational costs, excluding costs not associated with service quality in CineHoyts Estación Central and San Agustín complexes



Source: Company

27. As shown in both cases, Cinemundo's entry produced an increase in expenditures associated with service quality in Hoyts Estación Central, higher than those identified in comparable complexes, a conclusion consistent with the econometric analysis and the statement of Hoyts' CEO.

Conclusions on the merger case

28. The analyses performed showed consistently strong effects on the service quality, a conclusion also consistent with the qualitative information collected during the investigation.

29. This experience of measuring quality as a competitive variable was interesting mainly, i) due to the certainty on which costs were quality related: this association provided an excellent proxy for measuring quality; and ii) due to the use of a direct competitor approach we were freed of accurately determining the geographic relevant market.

30. By the end of June 2012, the FNE submitted a complaint before the TDLC requesting, as a remedy, divestitures of three cinema complexes where risks on competition were identified. This was the first time that the FNE challenged an already consummated merger that had not been ex – ante reviewed by the competition authorities.[13] The case was settled and the settlement approved by the TDLC in January 2013.[14] Under the settlement, the merged entity committed to divest two cinemas complexes in locations where the FNE found the most significant unilateral risks.

13 In Chile pre-merger notification is not mandatory, however, the FNE may initiate ex–officio investigations against prospective or closed transactions, if risks or actual or potential harm to competition are at stake.

14 Records of this case are available, here: http://www.tdlc.cl/Portal.Base/Web/VerContenido.aspx?ID=3963&GUID=

2.2 Market study on private healthcare suppliers

31. In 2012, the FNE outsourced to Universidad Católica de Valparaíso the performance of a market study in the private healthcare industry. Based on the OECD documents on 'Competition in Hospital Services' (2012) and the empirical and theoretical research made on the subject, the study was aimed at introducing competition among private hospitals and private health insurers, as a means to increase quality and reduce prices in the provision of health services.

32. In order to promote competition, the study proposed several measures that might help consumers or doctors in making informed decisions in the purchase of healthcare. The creation of public quality indicators could increase consumer tendency to shop-around, which would increase competition among hospitals. Competitive pressure, on the other hand, may encourage hospitals to produce better information on quality aspects, and make it available to doctors, regulators and consumers alike.

33. The study also warned about the particularities of healthcare due to its 'credence good' nature, which means that consumers are usually unable to measure their need for healthcare (quantity) and the quality of the healthcare they are receiving, even after the performance of the specific procedure they purchased. Neither previous research nor frequent purchases increase consumer information in a significant amount: in sum, consumers are generally unable to take good healthcare decisions on their own. Those decisions are normally taken with the assistance of a professional doctor or motivated by the insurance company through the use of discounts. Both doctors and insurance companies have the capacity to evaluate hospital quality, and therefore play a crucial agency role on behalf of the patient.

34. According to the market study, one of the main features of the Chilean healthcare market is the ubiquity of vertical integration among private hospitals and insurers. This may be specially problematic considering the agency role insurance companies are expected to play due to the scarce number of general practitioners in Chile (general practitioners usually play the role of main gate-keepers in other health systems). Vertical integration is normally defended on grounds of its suitability as a tool to control 'moral hazard' problems. This would lower the insurance companies' costs and, therefore, consumer prices, but may nevertheless affect consumers who are being channeled to the companies' own facilities, instead of being directed to the most cost-effective hospital (*i.e.*, the hospital with the best quality, measured in relation to the price the consumer is paying). Moreover, the constant flow of patients the insurance company may guarantee to the private hospitals may soften competitive rivalry in this market, since hospitals won't have to bid against each other in order to obtain clients reducing, therefore, the incentives to reveal quality information and invest in quality improvement.

35. The study is not conclusive about the final effects on vertical integration, warning that further study and empirical work must be done before the FNE can reach a final judgment about this issue. Nevertheless, some tension between lower prices and quality competition has been *prima facie* detected. The study suggests other possible means of reducing costs in private healthcare that may be less restrictive of quality competition. The creation of diagnose related groups and pay-for-performance standards may produce better results. Notwithstanding, all these instruments have risks that must be considered and controlled before any general reform is pursued.

2.3 Other incidental references to quality as a competitive variable

36. In a **bid rigging case in the advertisement agencies market** which the FNE brought before the Competition Tribunal, part of the discussion was whether a reduction in the number of bidders increased or decreased the quality of the offers. The FNE argued that the defendants conspired to reduce the number of participants in private bidding processes thus affecting the expected outcome of the contest and artificially reducing competition among them. The FNE also argued that the organizer of the contest —instead of

bidders— is the most suited to weigh expected quality of the different submitted offers. In turn, the defendants argued that a reduction in the number of bidders would improve the quality of the offers since the probability of winning the contract would increase. The Competition Tribunal did not decide on the quality argument but sanctioned the defendants for collective boycott.[15]

37. In a **merger case in media markets**, the FNE claimed that risks associated with the lack of information diversity and pluralism had an impact on another relevant competitive variable: service quality and variety. The TDLC, however, concluded that a 2009 legal amendment had eliminated from the functions of competition authorities any direct judgment regarding information pluralism and diversity. Nevertheless, the TDLC also noted that these values may be protected or promoted indirectly by means of defending or promoting economic competition in media industries.[16]

38. In a **dominance case in VoIP telephony**[17] a plaintiff claiming exclusionary effects argued with respect to the quality of services in the following terms: *'in VoIP communications, customers chose to pay a much lower price than the one they would currently pay according to fixed landline communications, and are willing to tolerate a service quality relatively inferior to landline communications. But since this quality will improve in the next years, customers will tend to favor VoIP communications'*.[18] The TDLC used the quality parameter, among others, to support its holding that providing VoIP services did not require a concession. Indeed, incumbents, such as the defendant, had a regulated quality standard to comply with while, regarding VoIP services, *'service quality is not guaranteed'*.[19]

39. Finally, we briefly refer to c**onsiderations regarding services quality in aftermarkets cases**. It is worth mentioning that a specific quality standard is usually used by product suppliers as an efficiency which justifies limiting the available alternatives regarding services associated with the sold product, such as follow-on repair and maintenance services. Commonly restrained through exclusivity clauses, competition is very limited in these 'aftermarkets'.[20] The FNE has recently faced cases in the automotive and imaging equipment markets. In both cases, it has closed the investigations without further action, but obtained the suppliers' commitments of increasing transparency of ex-ante information for facilitating customers' choices. Indeed, the FNE has held that information such as the likely need for repair, and the frequency of required maintenance services, the costs of replacement parts and the costs of repair, maintenance, and installation of part replacements services and the alternative suppliers of these services, should be known in advance by customers and that, consequently, companies should make this information available.[21]

40. As the Chilean experience described above illustrates, product quality can have significant effects on consumer welfare, particularly in those instances in which a firm's "product" is the very experience provided to customers. With respect to service firms like cinemas, business strategies may be aimed at

15 Records of this case are available in the link below, including TDLC's ruling. An appeal before the Supreme Court is still pending. http://www.tdlc.cl/Portal.Base/Web/VerContenido.aspx?ID=1759

16 TDLC's decision on this merger case known as Radiodifusión SPA/Horizonte, is available here: http://www.tdlc.cl/Portal.Base/Web/VerContenido.aspx?ID=3894&GUID=

17 Telephony services through voice over internet protocol

18 Free translation from the original in Spanish.

19 TDLC, October 26th, 2006, Ruling 45/2006, Voissnet I, Rc. 30°, upheld by SC. Available here: http://www.fne.gob.cl/wp-content/uploads/2011/03/sent_0045_2006.pdf

20 These situations refer to any market where the customers who purchase one product or service are likely to purchase a related, follow-on product.

21 FNE's investigations docket N° 1681-10 and N° 1700-10.

attracting consumers first and foremost by providing higher quality experiences, and protecting competition will ensure that firms continue to supply goods and services at quality levels demanded by consumers. While the cinemas case is the only instance to date in which the FNE has been able to quantify merger effects on service quality, the other cases described above make clear —even if only in passing reference— that quality considerations are also important in many other service industries as well, such as telecommunications, advertising, health care, and retail, among others. Thus, enforcement agencies should be sensitive to the importance of quality considerations and the harm that may result to consumers when diminished competition results in lower quality goods or services.