

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE**

Non-price Effects of Mergers - Note by Chile

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More documents related to this discussion can be found at www.oecd.org/daf/competition/non-price-effects-of-mergers.htm.

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1. Introductory Remarks

1. The FNE's internal guidelines mention the possibility that the anticompetitive risks of a horizontal merger involve competitive variables other than price¹.
2. In most cases, the merger analysis does not require giving special treatment to non-price effects, since the conclusions obtained via the conventional quantitative tools, which are typically framed in terms of price effects, can be extrapolated to other competitive variables².
3. However, there are certain markets that require special instruments, either because competition is more intensive in other variables or because price competition does not apply.
4. In Chile, we have had two experiences of this kind: the merger between Cine Hoyts and Cinemundo (2012) and a joint venture between banks for the administration of Automated Teller Machines or ATMs (2015). In the former, the most relevant competitive variable was the quality of service in the cinema complexes. In the latter, since the market was structured in such a way that there were no direct charges to consumers, the relevant competition variable was the number of ATMs instead of price.

2. Relevant cases

2.1. Joint Ventures among banks for administration of ATMs (2015)

5. In 2015, three of the biggest Chilean banks proposed to the FNE the creation of a joint venture that would have owned and administrated their ATMs that were not located in their respective branches. The parties together would have owned 43% of all ATMs in Chile.
6. The ATM Chilean system works as a self-regulated market where clients face no cash withdrawal costs, regardless of whether the bank that owns the ATM where the

¹The FNE's merger guidelines are available here: <http://www.fne.gob.cl/wp-content/uploads/2012/10/Guia-Fusiones.pdf>. The FNE's internal guidelines on horizontal merger analysis follow the insights above when stating that “[i]t is possible for the merged entity ... either separately or together, to increase prices, to **reduce output, quality or variety of products, or to alter some other competitive variable**...” This statement is complemented with a footnote indicating that “[i]n what follows, when the expression ‘capacity to raise prices’ is used, the capacity to alter any of the competitive variables mentioned is presumed to be included”.

²For instance, oligopoly models usually assume that firms maximize profits by taking into account that demand is decreasing on prices. However, it is perfectly possible to conceive, in a competition model, situations in which firms additionally compete in other variables to attract consumers. These variables, which are, associated with specific production costs, become a part of firms' decision problems. Profit maximization is then achieved through their choice of multiple competitive variables, such as product quality and price.

transaction is being made (acquirer bank) is the bank of the person in question³. Rather, the relevant cost is charged to the bank whose client is the person withdrawing the money (issuing bank). If the acquirer is at the same time the issuing bank, then there is no transaction made.

7. The latter implies that competition among banks to attract customers is not based on price, but on the number of locations, variable that directly affects the quality of service received by customers. In this sense, a concentration in the market reducing the number of competitors should create incentives to remove some ATMs or reduce the rate of growth in its number. The aforementioned is explained by a cannibalization effect: the set-up of a new ATM would deviate some customers from the ATMs of the other party, thus reducing the incentive to grow in capacity.

8. In this context, the number of transactions captured by a bank when a competing ATM is uninstalled increases with the number of ATMs it owns. Analogously, the transactions lost with the entry of a new competitor increases with the number of ATMs owned. Therefore, after a concentration in the market, if the parties had a higher market share in a determined area they would have more incentives to uninstall an ATM that is already there and less incentives to install a new one, *ceteris paribus*.

9. In conclusion, the concentration of ATMs that were previously competing for transactions could have implied more incentives to uninstall machines and fewer incentives to install new machines. In other words, the joint venture would have caused a concentration in the property of ATMs that, in absence of efficiencies and in presence of entry barriers, could have led to an eventual reduction of the number of machines in Chile.

10. The FNE tested this idea with two empirical exercises: the first one identified the relevant area of competition by measuring the scope of the impact on the number of transactions of nearby machines caused by the installation or uninstallation of an ATM. The second showed that the share of ATMs that the acquiring bank has in the surrounding area of a given ATM, as defined by the first empirical exercise, had a significant and positive effect on the probability of uninstalling the ATM.

11. The first exercise consisted in regressions that had as dependent variable the number of transactions made in all the ATMs located within a fixed radius from the Central ATM, and as independent variable of interest, a dummy variable that takes the value 1 when the Central ATM is working⁴ and 0 (zero) otherwise. The basic specification of the regressions that were estimated is presented in Equation (1)⁵, with the parameter β being the relevant to measure the effect under study. $\lambda_{i,t}$ represents a set of controls, δ_i fixed effects per location ID and γ_t time effects. Ten regressions were

³ The market is self-regulated because the tariff charged by the acquirer bank to the issuing bank is fixed and determined by the average cost of the withdraw of money of all the Chileans ATMs.

⁴ The data consisted in a balanced panel defined by a time dimension and a locationID (where the specific ATM was located) dimension. Then, it would make sense that there are some locations where the ATMs were not operative.

⁵ The specification presented in Equation (1) represents the effect on the ATMs located in the geographical ring defined by a radius of $d_2 - d_1$ meters centered in the Central ATM. The other specifications vary with the definition of the dependent variable.

estimated in which the dependent variable changes according to the distance between ATMs.

$$(1) \text{ Trans. Others. ATM. } [d_1, d_2] \text{ meters}_{i,t} = \alpha + \beta * \text{Presence. Central. ATM}_{i,t} + \lambda_{i,t} + \delta_i + \gamma_t + \varepsilon_{i,t}$$

12. The regressions determined that the influence of an installation or uninstallation on the transactions made on all the ATMs located in any given geographical ring was not significant if the distance from the center was longer than 300 meters:

Table 1. Effect of the presence of a Central ATM in total transactions of ATMs located within different geographical rings of distance

	0 - 50	50-100	100-200	200-300	300-400	400-500
Coefficient	-	-	-	-	-18.69	-92.12
	987.6*	658.0*	593.1*	474.8*		
	**	**	**	*		
	(154.7)	(102.8)	(119.6)	(146.6)	(153.2)	(142.6)
Obs.	144,525	82,869	124,099	129,480	126,377	126,708

Notes:

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

(**) Data of Banks, monthly frequency, from January 2014 to December 2015.

13. A variant of the aforementioned regressions identifies the extent to which the number of ATMs per geographical ring centered in the Central ATM affect its number of transactions. This regression uses as a dependent variable the number of transactions made on the Central ATM and as independent variables, the number of ATMs located in different geographical rings surrounding the center. The parameters β_i are the relevant ones to measure the effect under study. The other coefficients have the same interpretation as in the previous regressions.

$$(2) \text{ Trans. Central. ATM}_{i,t} = \alpha + \beta_1 * \text{N. ATMs. 0 - 50}_{i,t} + \beta_2 * \text{N. ATMs. 50 - 100}_{i,t} + \dots + \beta_6 * \text{N. ATMs. 400 - 500}_{i,t} + \lambda_{i,t} + \delta_i + \gamma_t + \varepsilon_{i,t}$$

Table 2. Change of transactions due to changes on the number of nearby ATMs

Dependent Variables:	Transactions Central ATM
N.ATMs 0-50	-87.76***
	(10.20)
N.ATMs 50-100	-76.71***
	(15.03)
N.ATMs 100-200	-30.09***
	(9.879)
N. ATMs 200-300	-23.21***

	(5.974)
N. ATMs 300-400	7.014
	(7.238)
N. ATMs 400-500	-1.913
	(9.508)
Obs	179,826

Notes:

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

(**) Data of Banks, monthly frequency, from January 2014 to December 2015.

14. The result of this regression shows that the number of ATMs in the surrounding area has a negative impact on the number of transactions made on the Central ATM. This effect is weaker the further away are the ATMs and is not statistically significant when the ATMs are located at a distance higher than 300 meters.

15. To estimate the possible effect of the joint venture on the number of ATMs, a further analysis was carried out using an area of influence around each ATM defined to have a radius of 300 meters, according to the estimations shown in Table 3 and Table 4. In concrete, using discrete choice models, the FNE found evidence that the share of ATMs owned by the acquiring bank in the area of influence has a significant and positive effect on the probability of uninstalling it. Two specifications were used to evaluate this:

Logit:

$$P(\text{Uninstallation}_{i,t} = 1) = F(\beta_0 + \beta_1 * \%Prop. 300. m_{i,t} + \delta_i + \gamma_t + \epsilon_{i,t})$$

Probit:

$$P(\text{Uninstallation}_{i,t} = 1) = G(\beta_0 + \beta_1 * \%Prop. 300. m_{i,t} + \sum_{j=1}^{320} \delta_j * \text{DummyDistrict} + \sum_{k=1}^{11} \delta_k * \text{DummyBank} + \gamma_t + \epsilon_{i,t})$$

16. The causal effects of one variable on another are obtained from the marginal effects. Since the shares of property and the changes in them vary with the different locations, the results are only to be interpreted as an average by region. The results showed that the JV would cause an average increase of the probability of uninstallation larger than 10% in eleven locations, regardless of the econometric model used.

- **Conclusions on the merger case:**

17. The analysis strongly suggested that the JV would have a negative impact on the number of ATMs in Chile. The result of the investigation was that the FNE did not approve the transaction and the Parties decided not to proceed with it.

2.2. Cinemundo/CineHoyts merger case (2012)⁶

18. In 2011, Chilefilms, a holding company that owned Cinemundo cinema chain, the third largest actor in the national market (with a 17% market share), took over CineHoyts, the nation's second largest chain (with a 30% market share). The combined Cinemundo/CineHoyts company 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% was comprised of small independent chains, none of which held over 1.5% market share.

19. The FNE learned about the Cinemundo/CineHoyts transaction after its consummation. Since competition among different cinemas is local, the FNE analyzed the transaction's anticompetitive risks separately in each of the geographic markets in which Cinemundo's 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 of service. Quantitative analysis showed that the most significant unilateral effect involved harms to the latter, a conclusion that was consistent with the qualitative data collected during the investigation.

20. In order to assess impacts on quality, the FNE focused its inquiry on operational costs, assuming that at least some of them were strongly linked to the cinemas' efforts aimed at providing better service. During the investigation, industry executives had identified the following differentiating factors between cinemas: queuing times for buying entry tickets or at concessions stands; theater hygiene; availability of air conditioning; sound and image quality; screen size; and availability of complementary services, among others.

21. Given the aforementioned facts, the FNE used the level of expenses in salaries 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 and qualitative evidence, and (iv) consistently identified by industry executives in the interviews as a competitive variable.

22. The main strategy employed to assess the effect of the merger was the estimation of regressions between the competitive variables (ticket prices or actual salaries expenditures) and the distance to the nearest competitors. Since, in three geographic areas, the transaction resulted in the suppression of the nearest competitor, the regression result allowed to evaluate the merging firm incentive to augment ticket prices and/or reduce salaries expenditures.

23. The definition of geographic relevant markets was not crucial for the investigation, since a direct analysis based on the distance to the nearest competitors

⁶This case was presented and described in detail in the Roundtable of the OECD of 2013, whose focus was quantitative analysis to measure quality ("The Role and Measurement of Quality in Competition Analysis", Competition Committee Policy Roundtable). In the present case, a summary is made where the focus is to highlight the existence of competitive variables different from prices.

and the impact of the change in this variable on the concerning competitive variables could be performed.

24. The second strategy to evaluate the effect of the merger was based on a natural experiment. It consisted in the examination of the effects of a past structural change in a local area. In December 2008, a Cinemundo cinema complex entered the Estación Central neighborhood of Santiago, locating its facilities 300 meters away from the incumbent, CineHoyts. This event provided information on the intensity of competition between Cinemundo and Cine Hoyts.

25. A ‘difference in differences’ estimation method was followed, using as control variable the other cinema complexes in the sample. This approach had the virtue of allowing the assessment of the intensity of competition on a market directly affected by the transaction, and not just the average expected effect of the increase in distance to the nearest rivals, as in the first approach. The regression also included time dummy variables and fixed effects.

26. The outcomes of the regressions regarding price consistently showed that ticket prices were indeed affected by competition. However, the intensity of competition on prices was low.

27. The basic model for assessing effects on quality employed as dependent variable the actual expenses in salaries in each cinema complex (more precisely, the natural logarithm), and as explanatory variable, the distance to the nearest rival in kilometers (column 1 of Table 1). The model also controlled for the number of people attending to each complex (the natural logarithm)⁷ and included fixed effects 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 simultaneously).

28. Instead of the distance to the nearest rival, in the regression shown in column 2 of Table 1, the variable of interest used in the econometric analysis was the distance to the nearest complex divided by its number of screens. Thus, this measure of competitive pressure takes into account not only the distance to the nearest rival but also its size in terms of number of screens.

Table 3. Effect of distance to rivals over the expenses in salaries

	Distance to the nearest rival	Distance/screens
Coefficient	-0.0172***	-0.0529**
StandardDeviation	(0.00443)	(0.0214)
Obs.	1,079	1,079

Notes:

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

⁷ In order to solve a potential endogeneity problem (*i.e.* a rise in the wages of workers should produce a rise in attendance to the cinemas, but an increase in cinema attendance could also produce a rise in wage expenditures, the method of instrumental variables was used. The attendance variable, lagged 12 months, was deemed a proper instrument because it was highly correlated to the dependent variable, but not to the error term.

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

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

30. In order to predict the effect of the transaction on salary expenses and with the aim of providing a range for the reduction on this expense a simulation was performed. Taking as given 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.

Table 4. 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%

31. In the cases of Cinemundo Plaza Alameda and Cine Hoyts 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 to the local Estación Central market through a ‘difference in differences’ estimation.

32. The dependent variable used in the econometric analysis was the current expense in salaries in each complex (the natural logarithm), and the explanatory variable, intended to capture the effect of Cinemundo’s entry, was the dummy variable ‘Plaza Alameda’, which took the value 1 for the Hoyts Estación Central complex after the entry of its rival in the shopping center Plaza Alameda. Fixed and time effects were also included.

33. All the coefficients associated with the variable ‘Plaza Alameda’ are statistically significant at the 95% confidence level. The observed effect of the entry was an increase in expenditures on salaries between 13% and 22%.

- **Conclusions of the merger case**

34. The analyses performed consistently showed strong effects on service quality, a result that was coherent with the qualitative information collected during the investigation. In concrete, executives of the firms remarked the importance of quality of service as a competitive variable and, from a theoretical point of view, the income and

cost structure of cinemas fosters quality competition instead of price competition. The latter because cinemas usually share their revenue with distributors ('box sharing') while receiving the whole benefits from the sale of snacks and beverages inside the cinema complexes. In this sense, they have an incentive to charge lower prices in order to attract consumers that are subsequently captive in the purchase of snacks and beverages.

35. This experience of measuring quality as a competitive variable was interesting mainly due to: i) the certainty about which cost factors were quality related; ii) the consistency between qualitative and quantitative information in order to highlight the importance of non-price competition and iii) the use of a direct competitor approach which freed us from having to accurately determine the geographic relevant market.

36. 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 to competition were identified. This was the first time that the FNE challenged a consummated merger that had not been ex – ante reviewed by the competition authorities. The case was settled and the settlement was approved by the TDLC in January 2013. The merged entity committed to divest two cinema complexes in those locations where the FNE found the most significant unilateral risks.