Merger Remedies and Entry: Evidence from the Fiat-Peugeot Merger *

EXTENDED ABSTRACT - PLEASE DO NOT CITE OR CIRCULATE

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Abstract

We study a recent merger case in the Chilean light commercial vehicle market that was subject to remedies. Unlike other cases, the Chilean competition authority decided to *foster* entry of new brands by reducing their entry costs. By combining a structural industry model, and allowing merging firms to flexibly internalize profits we provide detailed evidence on the remedy effect (or lack of) in the market. Then, we compare this remedy to a direct intervention which is the imposition of price caps for a subset of products, a proposal by the merging firms that was rejected by the authority. We highlight that, had entry been successful, the merger would have been unprofitable. Therefore, if merging firms accepted the remedy, it is not expected to curb unilateral effects. Additionally, the effects of a direct intervention are mixed as they depend on the portfolio and substitutability among their products and rivals. Among other findings, our empirical results support that inducing entry might not be an effective remedy.

Keywords: Merger analysis, merger remedies, differentiated products markets, conduct parameter.

JEL Classification: L11, L41, C51.

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1 Introduction

As Williamson (1968) stated, a merger has trade-offs from a policy perspective. On the one hand, they involve less competition by having a smaller number of firms, but on the other hand, it is possible for cost-efficiencies to exist. A competition authority needs to weigh these in a merger review and approve or deny them, case by case. But as cost-efficiencies are hard to measure (and link) to the specific realization of the merger, some alternatives have been proposed. Instead of relying on cost-efficiencies, they also use merger remedies. These are interventions in the market that seek to curb price-increasing incentives. Although merger remedies are widely applied, not much is known about their effectiveness. In particular, the imposition of a merger remedy can alter how merging firms set prices. Therefore, a study of merger remedies would require the analysis of how these firms internalize profits.

This paper makes two contributions. First, we analyze an understudied merger remedy, which is the reduction of fixed costs of potential entrants. A competition authority can find the closest product to the merging firms not available in the market and find ways to reduce its entry costs. The intention is that this remedy, if successful, would either make the product enter or the threat of entry could potentially moderate unilateral effects. Therefore, if entry is not observed it does not necessarily mean that the remedy was not effective.

In order to do this, we allow merging firms to internalize profits according to a conduct parameter. This is in contrast to Ciliberto and Williams (2014), Miller and Weinberg (2017) and Michel *et al.* (2024) which estimate a conduct parameter to measure coordinated effects. This novel approach will allow us to shed light on the evolution and potential effect of the fixed cost reduction remedy. We apply our methodology to the 2021 merger of Fiat and Peugeot in the Chilean light commercial vehicle market. The merger review found that both firms would have a high incentive to increase prices. On the cost-efficiency side the competition authority (Fiscalía Nacional Económica, FNE) couldn't find enough evidence that these would exist. Given this scenario, the FNE was able to find that Fiat and Peugeot helped Toyota produce a similar commercial vehicle in Europe (Toyota Proace). Then, the FNE imposed a remedy that involved discounts in producing costs of these commercial vehicles as long as they are destined for the Chilean market. Although the Toyota Proace never entered the market, it is not known if this entry threat made the merging firms price more aggressively. In this paper, we will estimate demand and supply with a conduct parameter on the merging firms. With this we will be able to, besides measuring the evolution of it over time, recover minimum fixed costs that rationalize the no-entry of the Toyota Proace.

Second, we use our results to compare the implemented remedy with a more direct intervention, which is the imposition of price caps for certain products. When asked about

what type of merger remedy would parties prefer, they argued that they would be willing to impose price caps. The FNE rejected this notion on the basis of being difficult to set, monitor among others. Setting aside all this issues, it is not clear is there is a scope for their use. To do this, we fix the prices of certain products of the merging firms and solve for the counterfactual.

To the best of our knowledge, we are the first to use a full structural industry model with flexible internalization of merging firms in order to evaluate the effect of merger remedies.[1] This approach, as we discussed will also be relevant to the comparison with other alternative remedies, like direct price caps.

Related literature

- Conduct parameter literature. But in our case we use it only on the merging firms in order to measure if and how they deviate from full merge internalization (to check if the merger remedy modifies conduct).
- Merger review literature. Mostly focuses on divestitures. In our case we study a fixed cost remedy and compare with price caps (which was the main proposal of the merging firms).

2 Data and Industry Background

2.1 Data and Industry Background

[to be completed]

2.2 Descriptive Statistics and Reduced Form Evidence

- We requested via FOIA to the Tesorería General de la República for the revenue received under the *impuesto verde* tax.
- The information we received includes all new (and used) vehicles purchased between 2015 and 2024, including prices.
- We use the CIT code for each vehicle to obtain its characteristics.

[1] The closest reference is Michel (2016) who allows merging firms to have a conduct parameter. In his study he focuses on organization integration instead.

2.3 Description of Merger Case

- During 2019, Fiat and Peugeot decided to merger their worldwide operations. This action triggered merger reviews by different competition authorities.
- In Chile the merger review found that there were only potential issues in the light commercial vehicle market. In particular, the RAM model and variants.
- Regarding cost-efficiencies, although they seemed plausible to exist, the firms didn't present enough evidence.
- Therefore, the FNE decided to impose remedies but first asked the firms what they could offer. They replied proposing the imposition of maximum prices for the RAM model.
- For different reasons, the FNE rejected this proposal. At the same time Peugeot also produces the Toyota Proace, which closely resembles some of the most important Peugeot models.
- The FNE proposed that the firms would not stop making the Proace for Toyota and to set up an allocation of deliveries (to Chile) if Toyota required it. In addition, the firms agreed to reduce transfer prices among other terms. This remedy was quite similar to the one imposed by the European Commission (EC). But the main difference is that the Toyota Proace was already in the European market, while in the Chilean case it was not.

3 Modeling framework

We model the light commercial vehicle market using a structural industry model that consists of a random-coefficient differentiated products demand model and an oligopolistic pricing model that includes a conduct parameter.

3.1 Demand Model

We specify a random coefficient logit model to estimate consumer demand following the seminal framework by Berry *et al.* (1995). There are J_t brands available in each market. We define a market t as national and monthly (indexed by t). Each market consists of a continuum of consumers. Individual i's indirect utility from purchasing product j in market

t is given by

$$u_{ijt} = x_j\beta_i + \alpha_i p^r_{jt} + \xi_{jt} + \epsilon_{ijt} \ , \ j = 1, ..., J_t; t = 1, ..., T \tag{1}$$

where x_j denotes a $K-$dimensional vector of brand j's observable characteristics (including several layers of fixed effects), p^r_{jt} denotes the retail price of product j in the market t, and ξ_{jt} is a brand-market specific quality shock that is unobservable to the researcher but observable to and equally valued by all consumers. As in Nevo (2001), the inclusion of fixed effects allows us to decompose ξ_{jt} into a time-invariant part that is captured by the fixed effects and an idiosyncratic component: $\xi = \bar{\xi} + \Delta\xi$. Thus, only the latter term is treated as our structural demand error for forming moment conditions. Finally, ϵ_{ijt} is an iid error term that is type I extreme value distributed.

The coefficients β_i and α_i are individual-specific. They depend on the mean valuations, a vector of i's demographic variables, D_i, and their associated parameters coefficients Φ that measure how preferences vary with demographics; therefore

$$\begin{pmatrix} \alpha_i \\ \beta_i \end{pmatrix} = \begin{pmatrix} \alpha \\ \beta \end{pmatrix} + \Phi D_i \tag{2}$$

Consumers who do not purchase any light commercial vehicles in a period choose the outside good. The indirect utility of consuming the outside good can be written as $u_{i0t} = \xi_0 + \phi_0 D_i + \epsilon_{i0t}$. Because only differences in utility are identified in discrete-choice models, we normalize ξ_0 to 0.

The vector of demand parameters θ_D consists of a linear part $\theta_1 = (\alpha, \beta)$ that affects each consumers identically, and a nonlinear (random coefficients) part $\theta_2 = \text{vec}(\Phi)$. Analogously, the indirect utility of consuming a product can be decomposed into a mean utility part δ_{jt} and a mean-zero random component $\mu_{ijt} + \epsilon_{ijt}$ capturing heterogeneity from demographics and unobserved taste shocks with $u_{ijt} = \delta_{jt}(x_j, p^r_{jt}, \xi_{jt}; \theta_1) + \mu_{ijt}(x_j, p^r_{jt}, D_i; \theta_2)$ with

$$\begin{aligned} \delta_{jt} &= x_j\beta + \alpha p^r_{jt} + \xi_{jt} \\ \mu_{ijt} &= [p^r_{jt}, x_j]' * \Phi D_i, \end{aligned} \tag{3}$$

where $[p^r_{jt}, x_j]$ is a $(K+1) \times 1$ vector of observable product characteristics.

Consumers buy either one unit of a single brand or take the outside good. They choose the option that yields the highest utility. The model's market share predictions are obtained

by integrating over all the shock distributions

$$s_{jt}(x_j, p_t^r, \delta_t, \theta_2) = \int_{A_{jt}} dP_\epsilon^*(\epsilon) dP_D^*(D) \tag{4}$$

where $A_{jt}(x_t, p_t^r, \delta_t, \theta_2) = \{(D_i, \epsilon_{it}) | \mu_{ijt} \geq \mu_{ilt} \forall l \in \{0, ..., J\}\}$ denotes the set of consumers' shock realizations for which j yields the highest utility.

3.2 Supply Model

The J brands in the industry are produced by R multiproduct firms. As supported by the institutional framework and discussed in the analysis of the FNE, car manufacturers set prices. Therefore, we don't model car wholesalers and other downstream agents.

We model car manufacturers marginal costs as a linear function of observable cost shifters w_{jt} and a brand-market specific cost shock ω_{jt}, that is unobserved by the researcher but known to the firms, so that $mc_{jt} = w_{jt}\gamma + \omega_{jt}$, where γ is a vector of marginal cost parameters to be estimated. In order to allow for flexible marginal costs, we include year fixed effects and several brand characteristics (weight, width, environmental code, origin, cc, exchange rate, type of fuel, among others). Additionally, we include a separate post-merger-merging firms dummy to capture potential cost-efficiencies.

In order to flexibly model that merging firms do not need to fully internalize, we follow the *profit internalization* approach similarly to Miller and Weinberg (2017) and Ciliberto and Williams (2014). We denote the degree to which brand i takes into account brand j's profits when setting its retail prices in market t by λ_{ijt}, which we treat as structural parameters. These parameters are arranged in an *internalization matrix* Λ_t, which generalizes the ownership matrix of zeros and ones in standard BLP-models. We restrict λ_{ijt} to the unit interval.

To keep the estimation tractable, we restrict the structure of Λ in an economically reasonable way. One of our primary goals is to quantify the effect of the merger review over time. For this, we allow Λ to be different in the 3 years post-merger. Therefore, we estimate profit internalization parameters that change across but are constant within the three periods. We assume that each firm internalizes all products of the other merging firm equally, so that our internalization parameters are not product- but firm-specific.

In the post-merger period, a firm that sells brand j maximizes the following profit function in each period t:

$$\Pi_{jt} = (p_{jt}^r - mc_{jt}) s_{jt} + \sum_{k \neq j} \lambda_{jkt} (p_{kt}^r - mc_{kt}) s_{kt} \tag{5}$$

where s_{jt} is the market share of brand j in month t. For the pre-merger period and for the non-merging firms in the post-merger period λ_{jkt} will be equal to 0.

Define $\Omega_{jkt} \equiv -\lambda_{jkt} * \frac{\partial s_{kt}}{\partial p^r_{jt}}$, which combines information on consumers' price elasticities and firms' internalization behavior, and let Ω_t be the stacked version of Ω_{jkt} with j in the rows and k in the columns. The first-order condition for brand j is given by

$$s_{jt} + \frac{\partial s_{jt}}{\partial p^r_{jt}} + \sum_{k=1}^{J} \lambda_{jkt}(p^r_{kt} - mc_{kt}) \frac{\partial s_{kt}}{\partial p^r_{jt}} = 0. \tag{6}$$

Plugging in the marginal cost function allows us to write the vector of structural cost shocks for all products in market t, $\omega_{.t}$, as a function of the model parameters and observed data, so that

$$\omega_{.t}(\theta_D, \gamma, \Lambda_t) = p^r_{.t} - w_{.t}\gamma - \Omega_t^{-1}\big(\theta_D, \Lambda_t, p^r_{.t}, x_{.t}\big) s_{.t}\big(\theta_D, p^r_{.t}, x_{.t}\big) \tag{7}$$

This structural cost shock forms the basis of our moment conditions to estimate the supply parameters.

For our identification strategy we assume that firms cannot anticipate the innovations to marginal costs ω_{jt} before period t. We judge this to be a reasonable assumption given that we include a detailed set of fixed effects in the marginal cost function; therefore, the remaining cost shocks are plausibly hard to predict in advance.

3.3 Estimation

[to be completed]

4 Results and Counterfactuals

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5 Conclusion and Outlook

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References

Berry, S., Levinsohn, J. and Pakes, A. (1995). Automobile prices in market equilibrium. *Econometrica*, **63** (4), 841–890.

Ciliberto, F. and Williams, J. W. (2014). Does multimarket contact facilitate tacit collusion? inference on conduct parameters in the airline industry. *The RAND journal of economics*, **45** (4), 764–791.

Michel, C. (2016). Identification and estimation of intra-firm and industry competition via ownership change.

—, Paz y Mino, J. M. and Weiergraeber, S. (2024). Estimating industry conduct using promotion data. *The RAND Journal of Economics*, **55** (4), 658–683.

Miller, N. H. and Weinberg, M. C. (2017). Understanding the price effects of the millercoors joint venture. *Econometrica*, **85** (6), 1763–1791.

Nevo, A. (2001). Measuring market power in the ready-to-eat cereal industry. *Econometrica*, **69** (2), 307–342.

Williamson, O. E. (1968). Economies as an antitrust defense: The welfare tradeoffs. *The American Economic Review*, **58** (1), 18–36.