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Bargaining Power and Local Heroes*

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March 18, 2013

Abstract

Bargaining Power of retailers is an important aspect of discourse in many industrialized countries, including Germany, Portugal, the UK, and the USA. In Germany the Federal Cartel Office argues that strong bargaining power of retailers presents danger for workable competition in the market. Furthermore, significant bargaining power on the retailer side is often assumed a priori without further investigation. Based on a treatment effect study using difference-in-differences techniques we show, that even small suppliers can have superior bargaining power against retailers depending on their shares on local markets. We do not argue that retailers have no bargaining power at all, but we want to show, that the division of bargaining power between the two sides of the markets varies from product to product and is also a dynamic phenomenon which changes over time. As a result, the a priori assumption of bargaining power of retailers can be very misleading.

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1 Introduction

The balance of bargaining power between upstream and downstream firms has been one of the most important topics of research in Industrial Organization in the last decade. An important application of the new framework developed to analyze such relationships is the retail industry (see, e.g., Inderst and Wey, 2011, von Schlippenbach and Wey, 2011). Due to increasing concentration in the retail sector, many researchers and competition authorities assume a shift in bargaining power from manufacturers to their buyers, the retail industry.¹ Recent sectoral investigations in the UK, Portugal, and Germany underline the importance of these tendencies from the viewpoint of competition authorities. Furthermore, existing retail regulations (e.g., shopping hours) have strengthened the dominant position of retailers even more, especially by preventing market entry and decreasing competitive pressure in retail markets (see Caprice and von Schlippenbach, 2008, Wenzel 2011). Competition between retailers is often seen as the only way to overcome the buyer power problem, because, due to increasing internationalization of the retail industry, there is a lack of global legislation, leading to a lack of other strategies to avoid inefficiencies through increased bargaining power of retailers (see Caprice and von Schlippenbach, 2008).

Under certain circumstances increasing buyer power results in lower intermediate prices, which may also result in lower retail prices (see, e.g., Inderst and Mazzarotto 2008). Generally, as it is textbook knowledge, lower intermediate prices tend to reduce retail prices, but the effect of buyer power on social welfare is ambiguous as several studies show. Lower prices for large customers can lead to higher prices for their smaller rivals, which is called the "waterbed effect". Inderst and Valletti (2011) show that these lower prices for large buyers may even increase average retail prices. In contrast Chen (2003) shows an anti-waterbed effect in a model with one dominant retailer and a competitive fringe, which results from the supplier's incentives to reduce the large buyer's outside option. In Chen's model retail prices do not decrease because a dominant retailer is able to obtain lower wholesale prices, instead the supplier lowers wholesale prices for the dominant retailer's competitors to counter its bargaining power. As a result, the theoretical predictions of the effects of buyer power and the waterbed effect are ambiguous.

¹See, e.g., Inderst and Mazzarotto (2008) discussing the findings regarding concentration.

Furthermore, buyer power may be related to reduced investment incentives of suppliers, which cause negative welfare effects.² Different effects have also been postulated in the literature. Suppliers may have incentives to invest in better product quality to increase their bargaining power against large buyers (see, Inderst and Wey, 2007/2011). Differently von Schlippenbach and Wey (2011) show using a theoretical framework that "One-stop shopping preferences" may lead to complementarities of purchases of independent products that may weaken the retailers' bargaining position. These studies show that the effect of buyer power on welfare measures is not easy to determine, but requires a careful investigation of specific cases.

Buyer-size effects are also identified in empirical studies using intra-industry data as in Chipty (1995). Another important finding is the fact that large buyers usually only get discount, compared to their smaller competitors, when the upstream market is characterized by sufficient competition. Ellison and Snyder (2011) show that large drugstores do not receive discounts when there is a monopolist supplier for antibiotics, but they receive small discounts from suppliers facing significant competitive pressure. Overall it is difficult to present any general statements about the distribution of bargaining power between wholesale companies and retailers.

Despite the ambiguous findings in theoretical and empirical studies, competition authorities, such as the German Bundeskartellamt or the Portuguese Competition Authority (see Bundeskartellamt, 2008 and Rodrigues, 2006) sometimes seem to assume that retailers per se have more bargaining power compared to their counterparts on the suppliers side. This proposition is difficult to hold, because on the one hand suppliers of retailers are often large multinational companies and on the other hand even small local companies can have significant bargaining power, depending on their market shares, against much larger retail companies. The bargaining power of retail chains can only be judged on an individual product or product group basis, which is exactly what our study is intended to show. Individual products can have significant effects on overall store revenues, because of the existence of so called "one-stop-shopping-behavior". One stop shopping describes the phenomenon that customers prefer to buy their whole purchase in one store. Johansen (2011) shows, that one-stop-shopping increases retailers' bargaining power against their suppliers. Empirical evidence for one-stop-shopping and also

²See, for a discussion of different innovation related effects of bargaining power, Chen (2007:25-26).

two-stop-shopping is reported in Smith and Thomassen (2012). Losing a certain product with a large market share in local markets can harm overall store revenues significantly, because one-stop-shoppers switch to another store where they can find their preferred product.³ As a result, retailers' bargaining power is to a certain degree related to consumer behavior.

Based on data for a large German retailer, we study the effects of a boycott by a regional beer brewery, which has a large market share, on the revenues of individual stores. Given the unexpected break-down of the bargaining by the supplier, we can claim exogeneity of the boycott, which provides us with a natural experiment. Our difference-in-differences estimates clearly show that even with additional promotion for other beers, there is a significant loss in revenues for the stores in the treatment group. This difference in sales losses is interpreted as evidence for the existence of complementarities in the purchases of customers such that the specific beer brand can harm the retailer by overall losses that exceed the specific importance the beer brand has in the beer sales. The findings of our study shows that bargaining power is not always distributed towards retailers, even when suppliers are small compared to their buyers. We argue that regional beer is a specific specialty and therefore has a unique sale point, which may also apply to other kinds of products like special regional cheese, wines or similar products.⁴ This finding is important, for several reasons. First, it implies that investigations of buyer power by competition authorities requires more effort in each particular case and the particular circumstances beyond size. Second, it shows that product differentiation and specialization may allow smaller firms to improve their bargaining situation.

The next section briefly discusses major determinants of buyer power.

2 Determinants of Buyer Power

In the classical monopsony model buyer power primarily depends on the fragmented supplier structure (see Inderst and Mazzarotto, 2008). As in the classical textbook case, many small suppliers face one large buyer, which obviously results in significant buyer power. The monopsony model is clearly the theoretical basis of the European Commission's view of buyer power in

³For the effects of one stop shopping on retailing formats see for example Johansen and Nilssen (2013).

⁴We thank Tore Nilssen for this comment.

their merger guidelines, where buyer power is assumed to harm competition (EU 2004/C31/03 61).⁵ The judgment of buyer power in European Competition Law can be summarized according to Wey, 2012 in a nutshell: buyer power increases competition, when supply prices are reduced without decreasing quantities, no competitors are banned, and retail customers gain lower prices. On the other hand, as he discusses, buyer power harms competition when lower prices are realized via lower quantities, suppliers are forced to ban other customers, and lower prices are not transferred to retail customers.

Clearly, as it is widely acknowledged, in most real world markets the monopsony model does not characterize the relationship between suppliers and retailers very well, but should take bargaining into account (see, e.g., Inderst and Wey, 2008, Mazzarotto and Inderst, 2008). The sizes of suppliers vary from small regional organizations to large multinational companies and most retailers are not the small atomistic firms of the monopsony model. Bargaining power between suppliers and buyers varies from case to case and even the relative size of the supplier to the buyer is not always an important determinant. What matters in the bargaining power models is the "outside option" for each party, which is the profit that is gained if there is no bargaining solutions (see, e.g., Inderst and Mazzarotto, 2008). This, of course, can be determined by size, but does not have to.

In particular, consumer behavior can be an important determinant of the distribution of bargaining power between suppliers and retailers as well.⁶ Caprice and von Schlippenbach (2012) analyze how one-stop-shopping behavior may lead to complementarities between formerly independent products which may weaken the retailers' bargaining position. The effects of one-stop-shopping on buyer power are also analyzed by von Schlippenbach and Wey (2011) who describe the mechanisms leading to increased supplier bargaining power. When small local suppliers have large market shares, they gain significant bargaining power over their retail customers. This is an important finding that leads to a more differentiated view regarding bargaining power. However, this finding has - to the best of our knowledge- not been tested empirically.

This phenomenon will now be subject of our empirical analysis. It will be shown, how complementarities in purchases can lead to bargaining power

⁵The EU (EU 2004/C31/03) highlights the major threat "when upstream sellers are relatively fragmented" (article, 61).

⁶One-stop-shopping describes a form of consumer behavior, where consumers purchase all their weekly groceries from a single retailer (see Competition Commission, 2000: 30).

also of small buyers. In the following sections our dataset, the empirical approach, and our results are presented.

3 The Beer Market and the Supply Side Boycott

Our analysis takes advantage of the fact that two regional beer breweries stopped supplying a specific retailer within a relatively short period of time. This retailer offers a full assortment including for the drink category a range of different beer brands.

In our treatment group with a certain brand during our sample period. The suppliers' boycotts happened due to failed negotiations about conditions for further supply of beer. These boycotts, were unexpected to the retailer, such that this situation provides us with a natural experiment. In particular, there were two independent breweries each offering one beer brand (brand a from supplier a and brand b by supplier b). An important aspect of these two cases is that both suppliers are regional brands that only deliver beer to some stores of this supermarket chain. As a result, we are able to create a treatment group as well as a control group to apply difference-in-differences techniques.

The beer market is very well suited to this kind of analysis, because we have several national and international brands as well as many small regional or even local brands. In particular, the variety of breweries in the German market is high with 1.341 breweries in 2011, which is followed by the British market with 946 breweries and 442 breweries in France (Brewers of Europe 2012). Given information of the cooperating retailer, these brands often have significant market shares in their local markets and are serious competitors of the national and international brands within these markets.

4 Empirical Analysis

4.1 Dataset

Our dataset consists of information for 61 southwest branches of a large German supermarket chain, between January 2010 and April 2012. Segmenting

the German food retail sector broadly into discounter and full-line distributor, the observed supermarket chain can be claimed to be a full-line distributor.⁷

We observe revenues for the beer brand, where the supplier stopped delivery, store level beer revenues and overall revenues as well as the corresponding quantities. Furthermore, we know in which county (Landkreis) the branch is located and we also know the number of competing supermarkets in the area. Descriptive statistics for the dataset can be found in the following table.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
store revenue	7,672	1,555,512	650,114.40	139,977.10	4,548,499
beer revenue	1,672	42,946.85	22,900.01	2,214.67	210,018.60
beer revenue brand a	129	335.42	423.13	0.58	2,005.32
beer revenue brand b	1,306	2,201.13	3,337.04	0.54	18,760.80

In the first case the brewery stopped delivery of its brand (brand a) on June 1 2011. Our treatment group encompasses nine stores and our control group 22 stores. The second refusal of delivery was regarding to 53 branches and the control group includes seven stores (brand b). In the second case the brewery stopped supply on January 1 2012. Our sample comprises always all stores, therefore, the stores delivering brand a are also in the control group for brand b and vice versa.⁸

4.2 Empirical Strategy

To estimate the effects of losing a supplier on store level revenues, we apply the so called difference-in-differences (DiD) technique. Due to the fact that we observe the treatment group, which is in our case the group of branches loosing brand a or b, and the control group, which never had the brands

⁷However, one should note that the supermarkets can be characterized as large supermarkets or department stores as well.

⁸However, given that the boycott of brand b is later in time, we do not use the observations were brand b has a boycott treatment. Therefore estimates of brand a will be more precise and not subject of any treatment effects at brand b. Given our later results, however, the treatment of brand a in the sample may bias the estimates of brand b. However, for negative effects revealed this means that the estimated effects are biased downwards and represent lower bounds. The effects will probably be even stronger.

before or after the boycott. The idea of DiD can be formalized as follows (see Wooldridge, 2010: 147-149):

$$REV = \beta_0 + \beta_1 A + \beta_2 T + \beta_3 AxT + u.$$

REV is our dependent variable indicating either stores' overall revenues or stores' overall beer revenues. All measures of revenue are normalized, that is the REV describes the revenue in the particular period divided by the stores average revenue over time. This is done to make the different revenues comparable also in the cross section. A is a dummy variable taking the value one if a store belongs to our first treatment group, losing their supply of beer brand a and zero otherwise. This dummy variable measures differences between the two groups of supermarkets that possibly existed before the treatment. T is a dummy variable that indicates the treatment period, it equals one if the stores of the treatment group are not supplied with brand a in the respective time period and otherwise takes the value zero. Such time dummy variables capture aggregate economic factors changing even without the delivery boycott. The most important term of the regression equation is BT and the corresponding coefficient β_3 . This interaction term measures the treatment effect we are interested in. What is the difference in revenues per store between treatment group and control group caused by the loss of beer brand a? Additionally, the term u_t is the standard error term satisfying the usual assumptions (see Greene, 2008: 11-19). This dataset allows us to analyze the effects of a boycott as a quasi-natural experiment, because we are able to identify the effects of strategic behavior of the supply side and simultaneously control for general shocks, which are relevant for the treatment group as well as the control group.

The idea is to identify a treatment effect on either the beer sales and/or the overall sales. Given the difference between these two parts of sales, we can infer if the breweries can take advantage of complementarities in the purchases of customers. Given the difference, we can see whether the "outside option" -which defines, as stated above, the bargaining power- is larger than its impact on the beer market or if it is either smaller. The treatment effect is therefore the shift of the threat point.

We repeat all estimations for the case of beer brand b using treatment group b and control group b. The next sections present our main results and some robustness checks that take account of the typical potential biases of Diff-in-Diff methods due to possible autocorrelation (see Bertrand et al. 2004).

5 Results

5.1 Basic Results

We first start estimating the basic equation described in the empirical strategy section with heteroskedasticity-robust standard errors. The results can be found in the following table. The results show, that the boycott clearly has negative effects on beer sales as well as overall store sales.

Table 2: DiD Estimates of the Effects of Supply Boycott of Brand a on Beer Sales and Overall Sales

	Revenues	Revenues	Beer Revenues
Treatment Period	0.306 (0.019)***	0.177 (0.034)***	0.296 (0.022)***
Treatment Group	0.011 (0.005)**	0.004 (0.004)	0.017 (0.006)***
Period x Group	-0.037 (0.019)**	-0.024 (0.010)**	-0.31 (0.020)
Monthly Dummies	YES	YES	YES
Beer Revenues	-	0.439 (0.081)***	-
Constant	0.964 (0.009)***	0.597 (0.068)***	0.836 (0.012)***
Observations	1,431	1,431	1,431
R^2	0.76	0.85	0.82

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

It is easy to see from the interaction term, that the boycott has a negative effect, which is statistically highly significant on overall store revenues. We find no significant effect on beer revenues, which may be mainly due to special promotions of other beer brands to compensate for lost beer sales as a result of the boycott of brand a. It is important to mention that we observe sales and not profits. This means that stabilizing sales does not mean stabilizing profits. Moreover, it can be assumed that stabilizing sales in the beer category is an expensive strategy. The rationale for the investment into low prices (that may generate losses) into a specific category can be explained by so called "loss leader" products that are shown to work due to their low possibly loss generating price as an advertisement device, while the profit is gained by other products (see Lal Matutes, 1994). The overall loss in revenues may be explained by so called one-stop-shoppers (see Bencourt, 2004: 138-139), who choose to shop at other shops that still have

brand a in their stores. In such cases customer behavior affects the distribution of bargaining power between retailers and suppliers. Von Schlippenbach and Wey (2011) show the implications of one-stop-shopping behavior on the supplier-retailer-relationship. As a result of one-stop-shopping, the retailer's bargaining position can be weakened because of its decreased disagreement payoff (see von Schlippenbach and Wey, 2011). In the next step, we also estimate the standard DiD equation for brand b and the respective control group.

Table 3: DiD Estimates of the Effects of Supply Boycott of Brand b on Beer Sales and Overall Sales

	Revenues	Revenues	Beer Revenues
Treatment Period	0.086 (0.012)***	0.005 (0.019)	0.195 (0.018)***
Treatment Group	0.003 (0.004)	0.003 (0.003)	-0.0001 (0.004)
Period x Group	-0.020 (0.008)***	-0.020 (0.008)***	0.0002 (0.012)
Monthly Dummies	YES	YES	YES
Beer Revenues	-	0.417 (0.073)***	-
Constant	0.963 (0.009)***	0.613 (0.061)***	0.839 (0.012)***
Observations	1,672	1,672	1,672
R^2	0.74	0.84	0.78

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

The results for group b confirm our estimation results from group a in table 2. We find statistically significant negative effects of the boycott on store level revenues, but no significant effects on beer revenues. We interpret these findings as evidence for the so called "one-stop-shopping"-phenomenon. This indicates that Stores can compensate beer sales by putting some other brands on promotion, but loose the one-stop-shopper who buy at other stores, where they can find their preferred beer brand. These findings are important with regard to assumptions about the distribution of bargaining power between suppliers and retailers, because we can show that the absolute size of the supplier and the retailer is not always a dominant factor. Suppliers marketing strong local brands, despite their small size compared to the retailers, can have significant bargaining power and may sometimes be able to enforce their claims. These impact can be assumed to be gathered due to the complementarity in purchases of "one-stop shoppers" that allows breweries as a

specialty to gain influence of all purchases and to increase bargaining power over the point of the size of own sales. However, for the interpretation of the results, one has to consider that in the control group for brand b, there are also the stores that stocked brand a, which had a negative effect due to the treatment. This means, that the negative effects found are a lower bound and could be even stronger.

5.2 Robustness Checks

In this section we show several robustness check to account for well known problems related to DiD estimations, such as the biased estimation of standard errors due to autocorrelation (see Bertrand et al. 2004). Bertrand et al. (2004) propose clustered bootstrapped standard errors as well as the reduction of the time-series into a before and after treatment group. However, they also point out that these techniques may suffer from a sample size that is too small, in particular with regard to the cross sectional dimension.

We apply those two methods as a robustness check. Table (4) and (5) provides the estimates with bootstrapped clustered standard errors. We consider 1000 bootstrap repetitions and cluster along the market dimension.

Table 4: DiD Estimates of the Effects of Supply Boycott of Brand a on Beer Sales and Overall Sales, Bootstrapped Clustered Standard Errors

	Revenues	Revenues	Beer Revenues
Treatment Period	0.306 (0.017)***	0.177 (0.036)***	0.296 (0.017)***
Treatment Group	0.011 (0.001)***	0.004 (0.007)	0.017 (0.010)**
Period x Group	-0.037 (0.031)	-0.024 (0.017)*	-0.31 (0.035)
Monthly Dummies	YES	YES	YES
Beer Revenues	-	0.439 (0.088) ***	-
Constant	0.964 (0.009)***	0.597 (0.072) ***	0.836 (0.012)***
Observations	1,431	1,431	1,431
R^2	0.76	0.85	0.82

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

The results are similar to the basic results. However, in the first specification, the Period x Group effect, the standard errors increase strongly, such that the t-value drops slightly beyond the 10% significance level. The second specification, controlling for beer revenues, however, adds explanatory power to the model and reveals a significant effect for the Period x Group variable (at the 10% level). The third specification does not reveal any effect on beer revenues, therefore, backing our hypothesis that the retailer was able to stabilize its beer revenues, but loses the valuable "one-stop-shoppers".

Table 5: DiD Estimates of the Effects of Supply Boycott of Brand b on Beer Sales and Overall Sales, Bootstrapped Clustered Standard Errors

	Revenues	Revenues	Beer Revenues
Treatment Period	0.086 (0.015)***	0.005 (0.019)	0.195 (0.021)***
Treatment Group	0.003 (0.002)	0.003 (0.003)	-0.0001 (0.003)
Period x Group	-0.020 (0.013)*	-0.020 (0.16)*	0.0002 (0.018)
Monthly Dummies	YES	YES	YES
Beer Revenues	-	0.417 (0.080)***	-
Constant	0.963 (0.009)***	0.613 (0.066)***	0.839 (0.011)***
Observations	1,671	1,671	1,671
R^2	0.74	0.84	0.78

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

Table (5) applies the same method, for the boycott of brand b. As expected the standard errors increase and, therefore, the level of significance is reduced. However, the Period x Group effect remains significant at the 10% level in the first two specifications. Specification three does not reveal any effect on the beer revenues.

Tables (6) and (7) provide estimates considering only the before and after treatment periods. Essentially these test provide the same results as tables (5) and (6) and therefore back the argument discussed above.

Table 6: DiD Estimates of the Effects of Supply Boycott of Brand a on Beer Sales and Overall Sales, Collapsed to before and after Period

	Revenues	Revenues	Beer Revenues
Treatment Period	0.048 (0.006)***	-0.007 (0.008)	0.102 (0.009)***
Treatment Group	0.009 (0.011)	0.004 (0.006)	0.008 (0.017)
Period x Group	-0.038 (0.024)	-0.024 (0.011)**	-0.26 (0.031)
Beer Revenues	-	0.543 (0.0633)***	-
Constant	0.984 (0.003)***	0.597 (0.072) ***	0.984 (0.004)***
Observations	121	121	121
R^2	0.30	0.70	0.51

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

Table 7: DiD Estimates of the Effects of Supply Boycott of Brand b on Beer Sales and Overall Sales, Collapsed to before and after Period

	Revenues	Revenues	Beer Revenues
Treatment Period	0.035 (0.009)***	0.071 (0.014)***	-0.094 (0.012)***
Treatment Group	0.006 (0.004)	0.004 (0.002)	0.006 (0.007)
Period x Group	-0.024 (0.012)**	-0.021 (0.013)*	-0.006 (0.016)
Beer Revenues	-	0.384 (0.103)***	-
Constant	0.995 (0.001)***	0.6050 (0.105)***	1.01 (0.002)***
Observations	121	121	121
R^2	0.35	0.41	0.45

Heteroskedasticity-robust standard errors in parenthesis. ***, **, * statistically significant on the 1, 5, and 10% level.

Summarizing the results of the robustness checks, the main conclusion remains valid. However, it is important to state that all methods are dependent on sample size. Given that the standard sample in DiD analysis comprises 50 states, we think that the bias should be smaller in our larger sample. Therefore, the boycott of the local beer brands did have a significant impact on overall store revenues, but not on the stores' beer revenues. This leads to the interpretation that managers were able to compensate the beer revenues, for instance by special offers and commercials in the beer segment, but different, lower spending customers were attracted by those offers. In particular, the loss of valuable "one-stop shoppers" harmed the retailer.

6 Conclusion

When buyer power is an issue in antitrust cases, most attention is usually devoted to the size of the buyer and its size is often compared to the size of the supplier. Taking advantage of two supply boycotts by strong regional beer brands, our local heroes, we can show that these strategies clearly have significant negative effects on the retailers revenues. The size of the supplier and the buyer may not always be the most important issue to evaluate buyer power. Even a relatively small supplier can have significant bargaining power, depending on its power on local markets. Our findings are particularly important when many customers are so called "one-stop-shoppers". If customers are "one-stop-shoppers" and they do not find a certain product in "their" store anymore, they may switch to another shop and buy everything at the other store. We observe that stores can compensate beer revenues through promotions, but they are not able to compensate overall revenues. So they might gain some "bargain hunters" but loose the "one-stop-shoppers" who usually buy everything at their branches. Therefore, due to the complementarities in purchasing the beer breweries have an impact on overall customers purchases, which they can take into account when bargaining with the retailer.

These findings lead us to the conclusion that a detailed analysis of each single case with regard to bargaining power is essential in order to obtain a reasonable impression of the distribution of bargaining power and the resulting buyer power of retailers in certain markets. A priori assumptions based on the size of suppliers and buyers may be very misleading, leading to the necessity of in depth analyses of bargaining power. In addition the findings

show that small suppliers of specific goods can take advantage of strategies of product differentiation to increase their bargaining power.

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