

# **WHEN MERGERS GET THE GREEN LIGHT: PRICE EFFECTS OF COMPETITION AUTHORITY-APPROVED MERGERS IN FINLAND**

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Publication: Working Papers 2/2025: When Mergers Get the Green Light: Price Effects of Competition Authority-Approved Mergers in Finland

Publisher: Finnish Competition and Consumer Authority

Postal address: Finnish Competition and Consumer Authority, POB 5, 00531 Helsinki, Finland

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kkv.fi

ISSN 2954-1859

# When Mergers Get the Green Light: Price Effects of Competition Authority-Approved Mergers in Finland\*

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February 25, 2025

## Abstract

Using a difference-in-differences approach, we estimate the price effects of five mergers approved by the Finnish Competition and Consumer Authority following an in-depth review. Our findings indicate substantial heterogeneity in post-merger price outcomes: in two cases, prices increased; in two cases, no statistically significant price changes were observed; and in one case, prices declined. Industries that experienced market entry following the merger did not exhibit price increases. We also conduct several merger-specific analyzes that allow us to link the estimated price effects to the pricing strategies of the merging parties and on merger-specific efficiencies.

**JEL Codes:** K21, L40, G34.

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\*Some early results of this project were published in the master's theses of Janne-Matti Kinnunen and Joonas Roos who acted as research assistants for the project. In addition, we thank Severi Saarela for research assistance. We also extend our gratitude to the audiences at the Finnish Economic Association's 45th Annual Meeting and the TSE Economics Research Seminar for their comments and suggestions. One of the authors of this paper worked for the Finnish merger control unit during the period studied in this paper.

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# 1 Introduction

Mergers are often beneficial as they can increase efficiency, foster innovation, and introduce new products and services to the market. However, some mergers can harm consumers and the economy by reducing competition, leading to higher prices, fewer choices, lower quality, and stifled innovation. The objective of merger control is to prevent market concentration that would be detrimental to consumers. The effects of mergers depend on variety of parameters and enforcement decisions must be made under strict time limits. Unsurprisingly, whether merger enforcement has been too lenient or too strict is the subject of much debate (see e.g. Affeldt et al., 2021 and Rose and Shapiro, 2022).

In this paper, we evaluate the price effects of five consummated mergers approved by the Finnish Competition and Consumer Authority (FCCA). Merger retrospectives serve as a valuable tool to assess how mergers evaluated by authorities impact competition and markets, offering insights into how well the authorities were able to predict the effects of evaluated transactions and on whether merger control policies have been too lenient. We follow the previous literature and estimate the effect of consummated mergers using a difference-in-differences methodology. For each merger, we construct a treatment group comprising the products and services offered by the merging parties in markets where both were active. Similarly, we define a control group consisting of products and services in markets where neither party or only one party was active. We then compare price developments in the control and treatment groups before and after the mergers.

The five mergers in our sample were completed between 2017 and 2018 following a Phase II merger review. Our sample consists of half of all II-phase mergers in Finland during our study period. Two of the mergers took place in the healthcare sector, one in grocery retail, one in construction, and one in the motor vehicle industry. Of the five mergers, three were approved unconditionally, while two were cleared with conditions. In the conditionally approved grocery retail merger, the parties were required to continue purchasing from their existing wholesaler for a limited time. In the conditionally approved healthcare merger, the parties divested clinics in specific geographic markets.

In the healthcare and construction sector mergers, the control groups are based on clinics and tenders in geographical markets where neither or only one of the merging parties was active. For the grocery retailing merger, which involved the sale of large supermarkets, our control group consists of the same products sold in convenience stores. In the motor vehicle industry merger, the control group includes products from a related market (fiberglass boats) where only the acquired party was active. For all five mergers, we also present results using an alternative specification in which the control group consists of competitors' products or services in the overlap market.

We find that the analyzed mergers have highly heterogeneous effects. In both healthcare sector mergers, we find that the merger resulted in higher prices. In contrast, for the

motor vehicle industry and grocery retailing mergers, we find no statistically significant effect on prices. Meanwhile, the construction sector merger resulted in lower prices. The unweighted average price effect across all mergers is close to zero. We also examine the effects of the mergers separately for the acquirer and the target. In both healthcare mergers, prices increased mainly in the former clinics of the target. Interestingly, although the grocery retail merger does not have a statistically significant impact on the average prices of both parties, we find that prices declined in stores previously owned by the target company with no statistically significant impact on the stores of the acquirer. The discrepancy is explained by the target being considerably smaller in size compared to the acquirer, and thus the target is given a very small weight when studying the effect of the merger on the prices of both merging parties.

In the second empirical section of the paper, we examine the effects of mergers on market concentration and entry dynamics. For mergers in the construction sector and the manufacturing of motor vehicles, where prices did not increase post-merger, we find that the impact on market concentration was smaller than what pre-merger market shares would have predicted. This outcome is largely attributed to new entry and the expansion of competitors. In contrast, in the healthcare sector, where we find evidence of increased prices post-merger, we do not observe entry of new supplier's post-merger.

In the third empirical section of the paper, we present merger-specific findings. In the merger in the motor vehicles industry, the acquirer was a manufacturer of both outboard motors and boat hulls. Before the merger, the acquirer had an agreement granting the target exclusive distribution rights for its motors in Finland. Following the merger, the acquirer began selling its motors through its own retail outlets. We find that the elimination of double marginalization in the retail sales of motors decreased prices by around 6-7%.

Secondly, we analyze the pass-through of efficiencies in the grocery retail merger. In our data, we observe the sum of purchasing price and logistic cost for both parties at the product level. By comparing the target's costs before and after the merger, we find that costs declined by approximately 12-16%. At the same time, prices fell by about 9-10%, suggesting that around 60-80% of the efficiency gains were passed on to consumers.

Thirdly, we analyze more closely the heterogeneous price effects in the healthcare mergers. First, we examine how the price effects differ between appointment times priced by the physicians working in the clinics as independent contractors and diagnostic services, such as medical imaging and laboratory tests priced by the clinics. The merger directly affects the pricing incentives of the clinic and had only indirect effects on the physicians who in principle also compete within the clinic with other physicians. We find that the prices of diagnostic services increase substantially more than the prices of appointment times. In diagnostic services, the acquirer sets prices uniformly. Post-merger, the prices at the target clinics were harmonized to align with those of the acquirer. We

demonstrate that this price harmonization largely drives the observed price increases in diagnostic services.

Finally, we study the effectiveness of the remedies. In the dental merger, we examine the price development in local markets, where the parties were required to divest clinics. There is no statistically significant change in prices, suggesting that the divestments successfully resolved the identified local competition issues. In grocery retailing, the wholesaler the remedy was designed to protect is still active in the market. We have not specifically evaluated whether the merger affected the competitive pressure the wholesaler exerts on the merging parties, and thus we are unable to assess the effectiveness of the remedy in detail.

Our paper contributes to the merger retrospective literature. For reviews of the literature, see, e.g., Kwoka (2015), Ashenfelter et al. (2014), Ormosi et al. (2015), Asker and Nocke (2021), Stöhr (2024), Shapiro and Yurukoglu (2024) and Olsen et al. (2024). The literature finds that mergers close to the enforcement threshold have on average increased prices, both in the U.S. and in Europe, by around 5%. We find that on average, the mergers in our sample did not result in higher prices. Based on our results, the authority's decision to approve the mergers was justified in most cases examined in this paper. Similarly to the previous literature, we find that mergers accepted after a detailed review had highly heterogeneous effects on prices.

Our paper differs from the prior merger retrospective literature in two ways. First, our paper covers a substantial share of all the mergers requiring in-depth review by the authority during the study period. Most papers focus on only one or few mergers (see, e.g., Hosken, 2013 and Friberg and Romahn, 2015), and papers covering larger number of mergers typically focus on larger jurisdiction with tens or hundreds of in-depth reviews per year, cover several years, and focus only on one specific industry (see, e.g., Garmon, 2017, Bhattacharya et al., 2023 and Focarelli and Panetta, 2003). By covering a larger share of mergers reviewed in the studied jurisdiction, we gain a more comprehensive understanding of the authority's ability to assess mergers and enforce merger regulations. Secondly, unlike most studies on European mergers, we focus on mergers studied by the National Competition Authorities (NCA) rather than the European Commission. Although the European Commission is responsible for reviewing the largest transactions concerning several member states within the European Union, the NCAs review a clear majority of mergers affecting competition in Europe. Therefore, understanding mergers reviewed by NCAs is essential for evaluating the state of merger control in Europe.

Our merger-specific analysis contributes to the scarce literature on merger-specific efficiency gains (Shapiro and Yurukoglu, 2024). While prior research, including Charpin and Piechucka (2021)'s study on the French transport sector merger, Demirer and Karaduman (2024)'s work on U.S. power plant acquisitions, and Craig et al. (2021)'s examination of U.S. hospital industry mergers, has explored efficiencies, we provide new evidence

by directly assessing how efficiencies were passed on to consumers in the grocery retail merger. Our findings on the effects of eliminating double marginalization in the motor vehicle industry are in line with Luco and Marshall (2020), who also identified a price decrease following the removal of double marginalization. Linked to our finding of price harmonization in the healthcare merger, DellaVigna and Gentzkow (2019) documents that in the U.S. retail market, after acquisitions, the uniform prices of the acquirer are installed in the target store. In the healthcare context, Buri et al. (2024) documents similar price harmonization after the acquisitions of small independent clinics in the Finnish private healthcare market, while Eliason et al. (2020) shows that acquired clinics in the U.S. dialysis industry adopt the operational strategies of their acquirers. In general, our merger-specific analyses underscore the role of pricing strategies, market entry barriers, and potential efficiencies in shaping post-merger price effects, highlighting the benefits of thorough, case-by-case review in merger control.

Our study has limitations. First, while we cover a larger share of mergers reviewed by the studied jurisdiction than most previous studies, our analysis is limited to assessing the impact of half of the mergers approved by the authority after an in-depth review during the study period. Second, we are unable to systematically study the effects on quality. In the motor vehicle industry merger, we collected data on reviews of new boat models in both the control and treatment groups before and after the merger and found no divergence in reviews post-merger, suggesting that the merger had a negligible effect on product quality. In the healthcare merger, we examined changes in treatment variety following the merger and found no effect on the range of services offered. For the grocery retail merger, the target was recognized as a high-end grocery retailer. After the merger, the acquirer continued to operate the acquired stores as a separate chain. However, starting in 2021, several of the acquired stores were converted into regular grocery stores. This change in store concepts could suggest a decline in store quality. However, we are unable to assess this statistically. A third limitation of our analysis is that, for some mergers, we are unable to examine effects across all product markets where the parties had overlapping activities. In particular, in the construction sector merger, our data is limited to tenders in road construction, preventing us from assessing the merger's impact on other infrastructure markets or the housing construction market. All of the above limitations restrict our ability to draw definitive conclusions about whether Finnish merger control was too lenient during our study period.

This article is structured as follows. Section 2 provides a brief overview of merger control in Finland and offers a more detailed discussion of the five mergers analyzed in this study. Section 3 describes the data used in our analysis. In Section 4, we outline our primary empirical framework, followed by the presentation of our main results in Section 5. Section 6 focuses on merger-specific findings, and Section 7 concludes with some closing remarks.

## 2 Institutional setting

### 2.1 Merger control in Finland

During the period we study, mergers had to be notified to the FCCA if they met specific turnover thresholds: the combined worldwide turnover of the merging parties had to exceed EUR 350 million, and each of the parties each had to have a turnover exceeding EUR 20 million in Finland.<sup>1</sup> The Finnish merger control framework is aligned with EU competition law and follows a two-phase review process to evaluate the notified mergers. Phase I includes an initial assessment of the merger’s potential effects on market concentration and competition. During our study period the maximum length of Phase I was one month.<sup>2</sup> Most mergers are approved in Phase I. However, if the FCCA finds that the merger may have significant anticompetitive effects, it advances the merger to a more detailed Phase II investigation, which during our study period could take up to three months.<sup>3</sup> In Phase II, the FCCA conducts a thorough investigation, which may include market tests, economic and data analysis, and consultations with industry stakeholders.

The FCCA intervenes in a merger if it is deemed to significantly impede effective competition in Finland. The SIEC test is also used in other EU member states and was introduced into EU merger control in 2004 and 2011 in Finland. Unlike the previously applied dominance test, it allows authorities to intervene in mergers that do not create or strengthen a dominant position. The SIEC test closely resembles the substantial lessening of competition (“SLC”) standard used in the U.S. (see, e.g., Bergman et al., 2019). The primary way to prevent the harmful effects of a merger is to approve it with conditions. For instance, a condition may require the merging parties to divest a part of their business to an external buyer. If the harmful effects cannot be eliminated by the commitments offered by the merging parties, the Market Court can, at the proposal of the FCCA, prohibit the merger entirely. The decision of the Market Court can be appealed to the Supreme Administrative Court that has the ultimate powers to either approve or prohibit a merger.

### 2.2 Sample selection

Figure 1 illustrates the number of mergers approved by the FCCA following Phase I and Phase II review processes. In this paper, we study mergers approved by the FCCA during 2017-2018. We focus on this time period because the mergers are recent enough to remain relevant yet sufficiently distant to allow for the study of long-term effects.

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<sup>1</sup>The merger control thresholds were revised in January 2023. Under the current thresholds, a merger must be notified to the FCCA if the combined turnover in Finland of the merging parties exceeds EUR 100 million, and the turnover in Finland of at least two of the parties exceeds EUR 10 million each.

<sup>2</sup>Since then it has been updated and currently phase I investigations can take up to 23 working days.

<sup>3</sup>Currently a phase II investigation can take up to 69 working days.



During 2017-2018, the FCCA approved a total of 68 mergers, 10 of which were approved in Phase II.<sup>4</sup> We focus on Phase II-approved mergers because they are flagged by the competition authority as potentially problematic, aligning with the merger retrospective literature’s emphasis on analyzing mergers at the enforcement margin. Of the 10 Phase II-mergers during our study period, five were approved with conditions and five were approved without any conditions. We include both conditionally and unconditionally approved mergers in our sample.

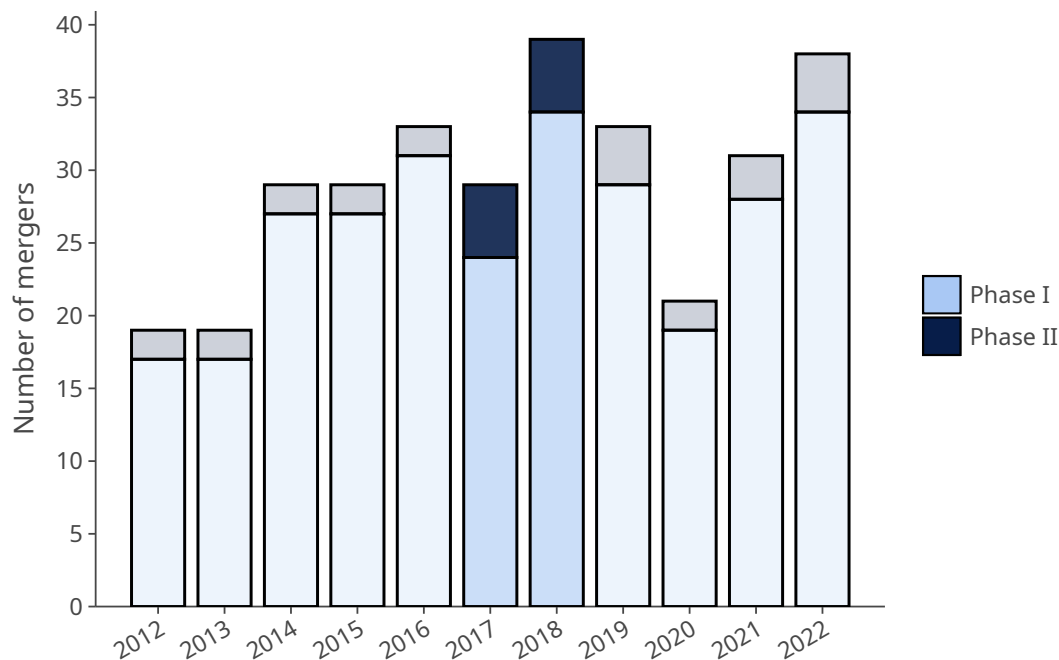


Figure 1: Mergers approved by the FCCA in the Phase I and Phase II of the merger control process during 2012-2022

The next selection criterion was the availability of high-quality data. We restricted our sample to mergers for which we could obtain both pre- and post-merger data on prices and quantities for a clearly defined product or service in at least one of the relevant markets analyzed by the authority. After this, our sample was reduced to five cases. Among the five mergers examined, the mergers between Terveystalo and Diacor, Yamaha and Konekesko, and SOK and Herkku were approved in 2017, while the mergers between Oral and Med Group, and YIT and Lemminkäinen were approved in 2018. The mergers between Oral and Med Group, and SOK and Herkku were approved with conditions, while the other three were approved without any conditions.

Of the five mergers not included in our sample, four (Attendo/Terveystalo, Avarn/Prevent 360, Eurofins/VTT, and Attendo/Mi-Hoiva) took place in bidding markets where the

<sup>4</sup>This means that 15% of the approved mergers went through the Phase II review. This proportion is slightly higher than usual. For instance, between 2012 and 2022, about 10% of mergers were approved following a Phase II review.

products or services differ between tenders. This variation makes it challenging to track price development without access to a comprehensive set of indicators on tender-specific product or service characteristics. Our sample does include one bidding market merger (YIT/Lemminkäinen), but there we have very detailed information on each project and the service is fairly homogenous (road maintenance). The fifth merger not included in our sample occurred in the accommodation market. Statistics Finland does collect a panel data set covering both the prices and quantities sold at the hotel and municipality level. However, the data could not be used for research purposes. In Section 5.3 and Appendix F, we present some results based on aggregated data, comparing price development in local markets where both parties were active with local markets where only one or neither of the parties was active.

Although we acknowledge that our sample only includes half of the mergers approved after a Phase II review, we believe it is reasonable to assume that these examined transactions represent a broader range of mergers and acquisitions approved by the authority after in-depth review during our study period. The analyzed transactions encompass diverse industries: private healthcare services, motorboat manufacturing and retail, grocery retail, and construction, and include both conditionally and unconditionally approved mergers. A summary of the analyzed mergers is provided in Table 1. The table provides an overview of the transaction, details the affected markets, and summarizes the authority's decision, including the market shares cited in the decision. A more comprehensive description of each of the five mergers is given in the Appendix.

For the YIT/Lemminkäinen and the Terveystalo/Diacor mergers, our main sample covers only some of the relevant markets investigated by the authority. In the Terveystalo/Diacor merger, the merger also had an impact on the occupational healthcare market. In Section 5.3, we discuss results on the effects of the Terveystalo/Diacor merger in the occupational healthcare market estimated in a previous study. The YIT/Lemminkäinen merger also affected the housing construction market and the market for large infrastructure projects. Although we were unable to collect data for these markets, we provide some observations on their development in Section 5.3.

Table 1: Overview of the evaluated mergers

Short description	Market definition	Market shares	Authority decision
<p><b>Terveystalo/Diacor</b></p> <p>Terveystalo acquired Diacor, which provides healthcare services to employers, private individuals, and insurance companies. Diacor operated 13 clinics in the Helsinki metropolitan area and one clinic in Turku. Prior to the merger, Diacor was owned by the non-profit Deaconess Foundation. Terveystalo is a large Finnish healthcare conglomerate that provides healthcare services to employers, private individuals, insurance companies, and the public sector.</p>	<p><b>Physician services.</b></p> <p>The market consists of selling physician appointment times and diagnostic services, such as medical imaging and laboratory tests, to patients. Patients pay around 85% of expenses out of pocket and the rest is covered by the Finnish National Social Insurance Institution. The exact geographical market definition was left open, but market shares were examined based on Finnish sub-regions ("seutukunta").</p>	<p>Combined market share of around 30-40% in the Helsinki sub-region, and 30-45% in the Turku sub-region. In the Helsinki region, Diacor's market share was 10-20%, while in the Turku region it was 5-10%. Conversely, Terveystalo's market share was 10-20% in the Helsinki region and 30-40% in the Turku region.</p>	<p><b>Approved on March 2017.</b></p> <p>Based on an analysis of market shares and the number of competitors in the local markets, the parties were deemed to still face competition from several firms after the merger. Furthermore, the authority anticipated that two competitors would expand their operations in the Helsinki sub-region (FCCA, 2017a).</p>
<p><b>Yamaha/Konekesko</b></p> <p>Yamaha acquired the sales of Yamarin and Yamarin Cross recreational motorboats, as well as the import and sales of Yamaha's outboard boat motors in Finland from Konekesko. The merging parties manufactured the two most popular motor boat brands in Finland. Konekesko was a subsidiary of Kesko Corporation, a major Finnish retailing conglomerate. In addition to manufacturing and selling motorboats, Konekesko served as the distributor of Yamaha motors in Finland. Yamaha manufactures its outboard motors outside of Finland.</p>	<p><b>Manufacturing and sale of aluminum motor boats and the sale of motors.</b></p> <p>Before the merger, Yamaha manufactured aluminum boats under the Buster brand, and Konekesko manufactured both fiberglass and aluminum boats. In addition to the hull material, motorboats are differentiated by their size and deck structure. In the decision, market definition was left open, but market shares in the manufacturing of aluminum motorboats were examined separately for boats over and under 6 meters, as well as for different deck structures. The geographical market was also left undefined, but was suggested to potentially encompass all of Finland.</p>	<p>Combined market share of 56% in over six-meter aluminum motorboats and combined market share of 57% in under six-meter aluminum boats. The market share of Konekesko was 15% in under six-meter boats and 28% in over six-meter boats. Conversely, for Yamaha the corresponding market shares were 41% and 28%. The market share of Yamaha motors in the outboard motor market was between 25-35%.</p>	<p><b>Approved on April 2017.</b></p> <p>The authority conducted an Upward Pricing Pressure (UPP) analysis, which, when accounting for efficiencies, indicated only modest pricing pressure for aluminum boats. The efficiencies stemmed from economies of scale, enabling profitable investment in a new industrial robot. Competitors were also expected to expand their aluminum boat production, and the authority anticipated that the merger would generate vertical efficiencies in the outboard motor market (FCCA, 2017b).</p>

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Table 1 – continued from previous page

Short description	Market definition	Market shares	Authority decision
<p><b>SOK/Herkku</b> SOK acquired from Stockmann its Herkku grocery stores. Stockmann Herkku operated six high-end large grocery stores in Helsinki, Espoo, Tampere, and Turku. SOK is the largest grocery retailer in Finland with a national market share of more than 40%. SOK operates convenience stores, supermarkets and hypermarkets under a co-operative model.</p>	<p><b>Grocery retailing and wholesale.</b> Based on an entry/exit analysis, the authority concluded that super- and hypermarkets, like those operated by the target, primarily exert competitive pressure on one another. However, the market shares cited in the decision also included sales from convenience stores. Although the geographical market definition was left open, market shares were analyzed within a radius of 1 to 20 km of each Herkku store.</p>	<p>Combined market share within a 5 km radius of Herkku stores of 45-60% in the Helsinki metropolitan area, 55-75% in Tampere, and 30-50% in Turku. The market share of Herkku varied between 0-10% and 5-15%, depending on the local market, while the market share of SOK ranged between 30-40% and 50-60%.</p>	<p><b>Approved with conditions on December 2017.</b> The condition required to make Herkku's purchases from the wholesaler Tuko until December 2018 and aimed to prevent disruptions to the operations of Tuko's other major owners. A UPP analysis in the retail market conducted by the authority showed no upward pricing pressure for SOK stores, and when accounting for efficiencies, it indicated downward pricing pressure for Herkku stores. The efficiencies were expected to result from lower purchasing prices and more efficient logistics (FCCA, 2017c).</p>
<p><b>YIT/Lemminkäinen</b> YIT acquired Lemminkäinen, which is a construction company that operates in building construction, infrastructure construction, and the sale of aggregates. Before the merger, YIT and Lemminkäinen were the two largest construction companies in Finland.</p>	<p><b>Road maintenance.</b> The road maintenance market consists of around 10-20 regional contracts tendered annually by the Finnish Transport Infrastructure Agency. The Finnish highway network is divided into 79 sub-regions, and contracts always pertain to a specific region. These contracts typically last for five years and are re-tendered upon expiration. No geographical market definition, but market shares are examined at the national level.</p>	<p>Combined market share of 61% in contracts tendered in 2017 and 36% of contracts tendered between 2014-2017. The market share of Lemminkäinen on contracts tendered in year 2017 was 16% and YIT's market share 45%.</p>	<p><b>Approved on January 2018.</b> Based on econometric analysis, where bid prices were regressed on the number of bidders and cost controls, the authority concluded that reducing the number of active firms in the market by one would not lead to higher prices. The authority's analysis revealed that in the years leading up to the merger, small and medium-sized firms had successfully expanded their operations in the construction sector (FCCA, 2018a).</p>
<p><b>Oral/Med Group</b> Oral acquired Med Group, which provided private oral healthcare services under the ONNI Hammas brand. In addition to dental care, Med Group offered home care and emergency medical services. After the merger, Med Group has continued to offer dental services to the public sector. Oral is the largest Finnish dental chain and is focused solely on dental care.</p>	<p><b>Dentist services.</b> The market consists of selling dental check-ups and treatments directly to patients. Patients pay around 85% of expenses out-of-pocket and the rest is covered by the Finnish National Social Insurance Institution. Based on critical loss analysis, it was concluded that public providers were not part of the relevant market. The geographical market was defined at the municipal level.</p>	<p>Combined market share ranging from around 20% to 40% in overlap municipalities with no divestment requirements and 40% to 70% in municipalities with required divestments. The market share of Med Group varied between 5-10%, 10-30%, and 30-50%, whereas the market share of Oral between 0-5%, 10-30%, and 30-60% depending on the local market.</p>	<p><b>Approved with conditions on July 2018.</b> The condition required the parties to divest one dental clinic in Imatra, Pieksämäki, Hyvinkää, and Porvoo to competitors. In cleared municipalities, merging parties faced several competitors and the UPP analysis showed only modest upward pricing pressure (FCCA, 2018b).</p>

### 3 Data

In this section, we describe the datasets used to evaluate each of the five mergers studied in this paper. For the merger between Terveystalo and Diacor, we use administrative claims data from the Social Insurance Institution of Finland (Kela). This dataset covers the years 2015 to 2020 and includes identifiers for patients and physicians, the name and address of the clinic, the date and duration of the visit, detailed treatment codes specifying the medical services received by the patient, and the price paid for each treatment.<sup>5</sup> Because all Finnish residents are entitled to the NHI benefit scheme, the data is highly representative, covering almost all visits in the private physician market. We aggregate the data so that our unit of observation is a month-clinic-medical procedure, i.e., one observation in the dataset consists of the price and quantity of a specific medical treatment offered at a specific clinic.

For the analysis of the merger between Oral and Med Group, we utilize the same administrative claims data from Kela. However, we are unable to include the year 2020 in our sample because the provider names were not available for all visits during that year. Additionally, we had to exclude the last two months of 2019 due to missing data for many providers. The dataset covers private dental healthcare visits for which customers received a Kela reimbursement.<sup>6</sup> Each observation in the dataset represents a customer visit and includes details on the procedure performed, the price paid, and the corresponding Kela reimbursement. For service providers, the data includes firm ID, name, and clinic location. As with the physician merger, the data is aggregated at the monthly-procedure-clinic level.

For the merger between Yamaha and Konekesko, our main dataset consists of motorboat prices, which were collected from price lists intended for retailers. The prices in the dataset are therefore the manufacturers' recommended retail prices set for dealers. Based on the interviews of some retailers, it is likely that any price changes occurring at the wholesale level are also reflected in the prices set by dealers. New price lists are published annually, and the data covers the years 2015–2022 and 12 boat brands.<sup>7</sup>

In addition to price information, the dataset includes information on motor power, as well as the boat's width, hull length, maximum number of passengers, type, and construction material.<sup>8</sup> We obtain the annual number of registered boats from a boat

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<sup>5</sup>The most frequently used treatment codes in the data correspond to various physician visit durations (15, 20, 30 minutes etc.), laboratory tests, such as basic blood count, Pap tests, and C-reactive protein (CRP) tests, as well as medical imaging procedures, including gynecologic ultrasounds, chest x-rays, mammograms, and knee x-rays.

<sup>6</sup>The dataset's most frequently used treatment codes include various fillings, basic oral examinations, periodontal treatments, and radiological procedures such as dental X-rays.

<sup>7</sup>The boat brands are AMT, Bella, Buster, Falcon, Faster, Finnmaster, Flipper, Silver, Suvi, TG, Terhi, and Yamarin. Together they account for around 80% of the market.

<sup>8</sup>Manufacturers list prices differently: some provide package prices (boat and motor together), while others list them separately. In the analysis, package prices were used, calculated by summing boat and

registry data maintained by the Finnish Transport and Communications Agency.<sup>9</sup>

Model-specific features of boats rarely change, aside from some adjustments to hull length and standard equipment. If a boat’s structure undergoes significant changes, manufacturers typically create a new model or a special edition for this purpose. However, one notable change during the study period is the addition of smart displays to several models. To account for this, a brand-specific dummy variable was created in the dataset, assigned a value of one from the year the smart display was added to the boat onward.<sup>10</sup>

To analyze the merger between SOK and Herkku, we utilize a dataset containing prices for 51 popular grocery products from 2016 to 2023 across various product categories.<sup>11</sup> Our data is at the national and chain level, where the unit of observation is the average price of product per chain per month. Finnish grocery retailers operate multiple chains featuring stores of various sizes, including hypermarkets, supermarkets, and convenience stores, each under distinct brand names. Products are identified by their EAN codes. We observe total monthly sales and average prices separately for Herkku, SOK’s other chains (including convenience stores, supermarkets, and hypermarkets), and similarly for their competitors, Kesko and Lidl. In addition to retail prices, for the merging parties, we observe for each product the sum of purchasing price and logistic cost.

The SOK/Herkku dataset is at the national level and lacks a regional dimension, making it impossible to analyze price developments specifically in SOK stores located near Herkku stores. However, the merger decision notes that SOK and its regional cooperatives implement pricing strategies at both national and regional levels. As a result, localized price increases stemming from the merger were considered unlikely (FCCA, 2017c).

The dataset used to analyze the merger between YIT and Lemminkäinen consists of road maintenance bid data spanning from 2006 to 2023. The dataset was assembled from ELY Centre procurement decisions and includes all accepted bids in the tenders. The ELY Centre data has been combined with variables describing the maintenance contracts compiled by the Finnish Transport Infrastructure Agency. Key explanatory variables in the dataset capture factors influencing costs, such as contract duration, total road length, gravel road length, and pedestrian and bicycle path length. All of the datasets used in the study are summarized in Table 2.

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motor prices. Some firms also use promotional prices, which when available, were used as the price variable.

<sup>9</sup>The end user of a watercraft is required to register their vessel in the system if its hull length exceeds 5.5 meters or if its motor power is at least 15 kilowatts, equivalent to 20.4 horsepower.

<sup>10</sup>From 2017 onward, a smart display is included in Buster’s larger models. For aluminum Yamarin Cross boats, the smart display becomes standard equipment in 2020, while AMT, Faster, and Silver boats include a smart display starting in 2018.

<sup>11</sup>There is a gap in the last three months of 2017 during which Herkku prices are not observed. The three biggest product categories in the data are Dairy (14 products), Meat (12 products), and Bread (6 products).

Table 2: Summary of the datasets used to evaluate the mergers

Merger	Unit of observation	Time period and frequency	Data sources
<b>Terveystalo/Diacor</b>	Medical treatment given in a specific location, such as chest x-ray at Terveystalo clinic located at Jaakonkatu 3 in Helsinki	Monthly data from January 2015 to December 2020	Administrative patient and visit-level claims data from The Finnish Social Insurance Institution
<b>Yamaha/Konekesko</b>	A motor hull and motor combination, such as Yamamarin 63 DC with 115 hp motor	Yearly data from 2015 to 2022	Price lists from manufacturers' websites. Quantity data from a boat registry data maintained by the Finnish Transport and Communications Agency.
<b>SOK/Herkku</b>	A grocery product in a specific chain, such as 1.5 liter Coca-Cola at Prisma chain owned by SOK	Monthly data from January 2016 to April 2023	Pre-merger data from Herkku used in the merger review process. Post-merger data and data for other firms collected from the three major grocery firms for the FCCA's food market study
<b>YIT/Lemminkäinen</b>	A bid submitted for a specific tender, such as YIT's bid for the road maintenance contract in the Alavus region for the years 2017–2022	Yearly data from 2010 to 2023	Bid information collected from the procurement decisions. Project-specific information collected from the website of the Finnish Transport Infrastructure Agency
<b>Oral/Med Group</b>	Medical treatment given in a specific location, such as dental examination at Oral clinic located at Mannerheimintie 76 in Helsinki	Monthly data from January 2015 to December 2019	Administrative patient and visit-level claims data from The Finnish Social Insurance Institution

## 4 Empirical strategy

We employ a difference-in-differences approach to estimate the price effects of the mergers, focusing on product markets where the merging parties had overlap. Specifically, we estimate both the total combined effect on the merging parties and the separate effects on the acquirer and the acquired entities.

For each of the five mergers, we construct a treatment group comprising the products

and services offered by the merging parties in markets where both were active. The control group, in contrast, includes products and services from markets where neither party was active or only one of the parties was active. We then compare the price developments in the treatment and control groups before and after the merger to estimate the merger's effects.

In the healthcare and construction sector mergers, the control group consists of clinics and tenders in geographical markets where neither or only one of the merging parties was active. For the merger between Terveystalo and Diacor, the overlapping market areas are the Helsinki and Turku sub-regions. For the merger between Oral and Med Group, the overlap markets include clinics in the municipalities of Espoo, Helsinki, Jyväskylä, Kouvola, Kuopio, Lappeenranta, Salo, Turku, and Vantaa. In both healthcare mergers, we restrict the control group to providers with annual revenues exceeding one million euros prior to the merger. Additionally, we exclude clinics that were acquired during the period 2015–2020.

In the merger between YIT and Lemminkäinen, we classify ELY regions based on Lemminkäinen's bidding activity prior to the merger. ELY regions are responsible for organizing tenders for road maintenance contracts within their respective areas. YIT participated in most of the tenders in all regions. Notably, there are also no regions where Lemminkäinen did not participate in any of the tenders. Construction firms rely on local subcontractors, and variations in subcontractor networks may help explain the differing participation rates among firms. We classify ELY regions where Lemminkäinen's pre-merger participation rate was less than 50% as non-overlapping regions and those where its participation rate exceeded 50% as overlapping regions. To test the sensitivity of the results, we also used thresholds of 40% and 60%, with the corresponding results reported in the Appendix D. The ELY regions where Lemminkäinen had lower bidding activity are primarily located in the northern and eastern parts of Finland.

In its decision, the FCCA evaluated the road maintenance market at the national level. If the merger also impacted geographical markets where Lemminkäinen was not active, this could potentially bias our estimates. To address this concern, we test the robustness of our results using a methodology similar to that of Bhattacharya et al. (2023), who analyze the effects of retail mergers in the U.S. This approach constructs the counterfactual based on predictions derived from pre-merger data. Put simply, in the first stage the method constructs the post-merger counterfactual based on the pre-merger trend, and then in the second stage the actual price development is compared to the counterfactual. A detailed description of this method is provided in the Appendix D.

In the mergers of grocery retailing and manufacturing of motor vehicles, we do not have regional dimension in our data, and we use other means to categorise the product markets into overlapping and non-overlapping. In the merger between SOK and Herkku, the treatment group consists of Herkku stores and SOK's supermarket and hypermarket



chains, S-market and Prisma. Herkku stores were something between supermarkets and hypermarkets, having a wider selection of food products but still only selling grocery items unlike the Finnish hypermarkets, which also sells a wide variety of clothing and home appliances. The control group consists of the same products sold in competitor convenience stores.

Similar to the construction merger, there is also a concern that the merger may have affected the control group market. In its decision, the authority included sales from convenience stores when calculating market shares, despite acknowledging that supermarkets and hypermarkets primarily compete with each other. Again, to address this concern, we apply the approach in Bhattacharya et al. (2023) where the post-merger counterfactual is created using pre-merger price trends. We also apply this methodology to study how the merger impacted the purchasing prices and logistics costs of the merging parties. Here, the decision is driven by us lacking information of such variables for the control group.

In the merger between Yamaha and Konekesko, the treatment group consists of aluminum boats, where Yamaha was active with its Buster line and Konekesko had entered the market in 2011 with its Yamarin Cross boats. The control group, in contrast, comprises fiberglass boats, where only Konekesko was active. The distinction between aluminum and fiberglass boats is supported by survey evidence, which highlights the importance of construction material to consumers. In a 2016 survey targeting customers who purchased boats from the merging parties, only 16% of aluminum boat buyers indicated that they might have considered a fiberglass boat as a substitute (FCCA, 2017b). This suggests limited substitutability between the two materials, particularly for aluminum boat buyers.

In all five mergers, we also report results from a specification in which the control group consists of competitors' products or services in the overlap markets. Because it is a standard assumption in many economic models that prices are strategic complements (Deneckere and Davidson, 1985), these results should be interpreted as providing the lower bound (in absolute terms) of the true price effects. Strategic complementarity implies that an increase in prices by the merging parties may lead to corresponding price increases by their competitors in the same market. As a result, the price difference between the treatment and control groups may understate the full effect of the merger on prices.

In all regressions, we weight the observations based on pre-merger sales, with the exception of the merger between YIT and Lemminkäinen, where we use the size of the contract measured by its total road kilometers. Following the advice of Solon et al. (2015), we provide also unweighted results in the Appendix. Table 3 summarizes the treatment and control groups used in the analysis.

Table 3: Treatment and control groups used to evaluate the mergers

<b>Merger</b>	<b>Treatment group</b>	<b>Main control group</b>	<b>Alternative control group</b>
Terveystalo/Diacor	Clinics in overlap regions	Clinics of competitors in non-overlap regions	Competing clinics in overlap regions
Yamaha/Konekesko	Aluminum boats	Non-aluminum boats of competitors	Competing aluminum boats
SOK/Herkku	Supermarkets and hypermarkets	Convenience stores of competitors	Competing supermarkets and hypermarkets
YIT/Lemminkäinen	Bids of merging parties in active regions	Bids of competitors in non-active regions	Competing bids in active regions
Oral/Med Group	Clinics in overlap regions	Clinics of competitors in non-overlap regions	Competing clinics in overlap regions

The difference-in-differences method is implemented using the following two-way fixed effects regression model:

$$Y_{ijt} = \alpha_{(i)j} + \lambda_t + \beta^{TWFE} D_{jt} + (X_{ijt}) + \epsilon_{ijt},$$

where  $\alpha_{(i)j}$  are the unit fixed effects,  $\lambda_t$  are the time fixed effects,  $D_{jt}$  is a dummy variable that equals one for merging parties after the merger, and  $X_{ijt}$  is a vector of potential control variables.  $\beta^{TWFE}$  is the coefficient of interest, providing the estimate of the merger's effect.

We use time fixed effects for all mergers, applying either month-year or year fixed effects depending on the merger analyzed. For the Terveystalo/Diacor, SOK/Herkku, and Oral/Med Group mergers, we use also complete unit fixed effects, such as medical procedure-clinic or product-chain fixed effects. For the Yamaha/Konekesko merger, we apply fixed effects for year and boat model while controlling for motor power. This approach is motivated by two factors. First, there are frequent minor changes in motor model names, making motor fixed effects impractical, as they would significantly limit the variation needed to estimate the merger's effect. Second, motor prices are strongly dependent on power output.<sup>12</sup> By controlling for motor power, we effectively assume that a given boat model with motors of the same power output is functionally the same product.

For the YIT/Lemminkäinen merger, we include year and firm fixed effects and control for contract characteristics, including the total number of road kilometers, the number of

<sup>12</sup>Running a regression where the motor's price is explained by its power, a dummy variable for electric motors, and year and brand fixed effects yields an  $R^2$  of 0.97.

pedestrian and bicycle lane kilometers, the number of gravel road kilometers, the duration, and the difficulty of the tender. We do not use tender or area fixed effects because road maintenance contracts typically last five years, and the tender for the contract in the same area is thus usually observed only twice during the period we study. Additionally, the content of the contract may have changed over time.

We use case-specific information to set the time window used for estimation. For the YIT/Lemminkäinen merger, we use data from 2014 onward, as Lemminkäinen entered the market in that year. We also drop tenders organized in 2018 prior to the approval of the merger.<sup>13</sup> For the SOK/Stockmann Herkku merger, we begin the estimation period in January 2017, as the control group market (convenience stores) experienced a major merger between Kesko and Lähikauppa, completed in the spring of 2016. For the Oral/Med Group merger, we use data from 2017, excluding earlier periods due to Med Group’s acquisition of some dental clinics in 2016. For the Yamaha/Konekesko merger, we use the full sample from 2015 to 2022 to estimate the effects, while for the Terveystalo/Diacor merger, we use data from 2015 to 2020.

## 5 Main results

### 5.1 Prices

Table 4 reports the estimated price effects for the merging parties, with results provided separately for the two control groups: non-overlap markets (Panel A) and overlap markets (Panel B). In all regressions, the dependent variable is the logarithm of price. When using non-overlap markets as the control group, we find a statistically significant increase in prices of around 8% for the merger between Terveystalo and Diacor. Similarly, the Oral/Med Group merger resulted in a statistically significant price increase of around 2%. Conversely, the YIT/Lemminkäinen merger lead to a statistically significant price decrease of around 9%. The estimated price effects for the Yamaha/Konekesko and SOK/Herkku mergers are small and statistically insignificant.

Using overlap markets as the control group yields similar qualitative results for most mergers but with some differences in magnitude. The Terveystalo/Diacor merger shows a comparable price increase of 8%, while the price effect for the Oral/Med Group merger becomes statistically insignificant. The YIT/Lemminkäinen merger still exhibits a significant price decrease, although smaller in magnitude at 4%. The price effects for the Yamaha/Konekesko and SOK/Herkku mergers remain statistically insignificant. Both the results from the YIT/Lemminkäinen and Oral/Med Group mergers suggest that competitors in the affected markets responded in the same direction to the pricing changes of

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<sup>13</sup>Road maintenance area tenders are typically announced in late fall of the year prior to the contract start. Bid submissions are generally due in December of the preceding year or early in the contract start year, depending on the project.

the merging parties, consistent with the control group providing a lower-bound estimate. In the YIT/Lemminkäinen merger, the difference between the two estimates is the largest in the sample.

Table 4: Effects of mergers on prices

<b>Panel A:</b> Non-overlap markets as the control group					
	Terveystalo/Diacor	Yamaha/Konekesko	SOK/Herku	YIT/Lemminkäinen	Oral/Med Group
<b>Log(price)</b>					
ATT	0.0781*** (0.0199)	-0.0113 (0.0161)	0.0118 (0.0098)	-0.0966*** (0.0346)	0.0184** (0.0075)
N	538,443	997	8,942	263	176,626
<b>Panel B:</b> Overlap markets as the control group					
	Terveystalo/Diacor	Yamaha/Konekesko	SOK/Herku	YIT/Lemminkäinen	Oral/Med Group
<b>Log(price)</b>					
ATT	0.0795*** (0.0199)	-0.0208 (0.0169)	0.0111 (0.0103)	-0.0400* (0.0219)	0.0049 (0.0108)
N	650,845	765	11,147	250	120,990

Dependent variable is the logarithm of price. Standard errors (in parentheses) are clustered by clinic, boat model, product, tender, and clinic in the order corresponding to columns 1 through 5. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

To evaluate the credibility of our empirical framework, we plot the results of an event-study specification for the above price effects in Figure 2. The event-study estimates show the average mean differences between the treated and control groups for each time period using the month or year before the merger as the reference period.<sup>14</sup> Except for the Oral/Med Group merger, none of the point estimates for the pre-merger period are statistically significant. This indicates that, prior to the merger, the control and treatment groups exhibited similar price trends, supporting the validity of the parallel trends assumption. However, for the Oral/Med Group merger, some differences exist between the treated and control groups, as a few of the point estimates before the merger are statistically significantly different from zero. To alleviate concerns about the validity of the parallel trends assumption in the Oral/Med Group merger, we estimated the model separately with clinic-procedure-specific and clinic-specific trends. Encouragingly, the inclusion of these trends did not alter the estimates.

After the merger, the point estimates are statistically significantly different from zero in the Terveystalo/Diacor and Oral/Med Group mergers, consistent with the statistically significant effects reported above. In contrast, for the YIT/Lemminkäinen merger, the

<sup>14</sup>We have excluded basic oral examinations from the event study, as Oral frequently conducts promotional campaigns and significantly lowers its prices for this service. We obtain a slightly larger (in absolute terms) point estimate when running the regression from Table 4 without including basic oral examinations. Additionally, the effect for basic oral examinations is statistically insignificant.

individual yearly coefficients are not statistically significant, despite the statistically significant effect reported above. Given that only around 10 to 20 contracts are tendered yearly, it is not surprising that the estimated confidence intervals in the event-study specification are large.

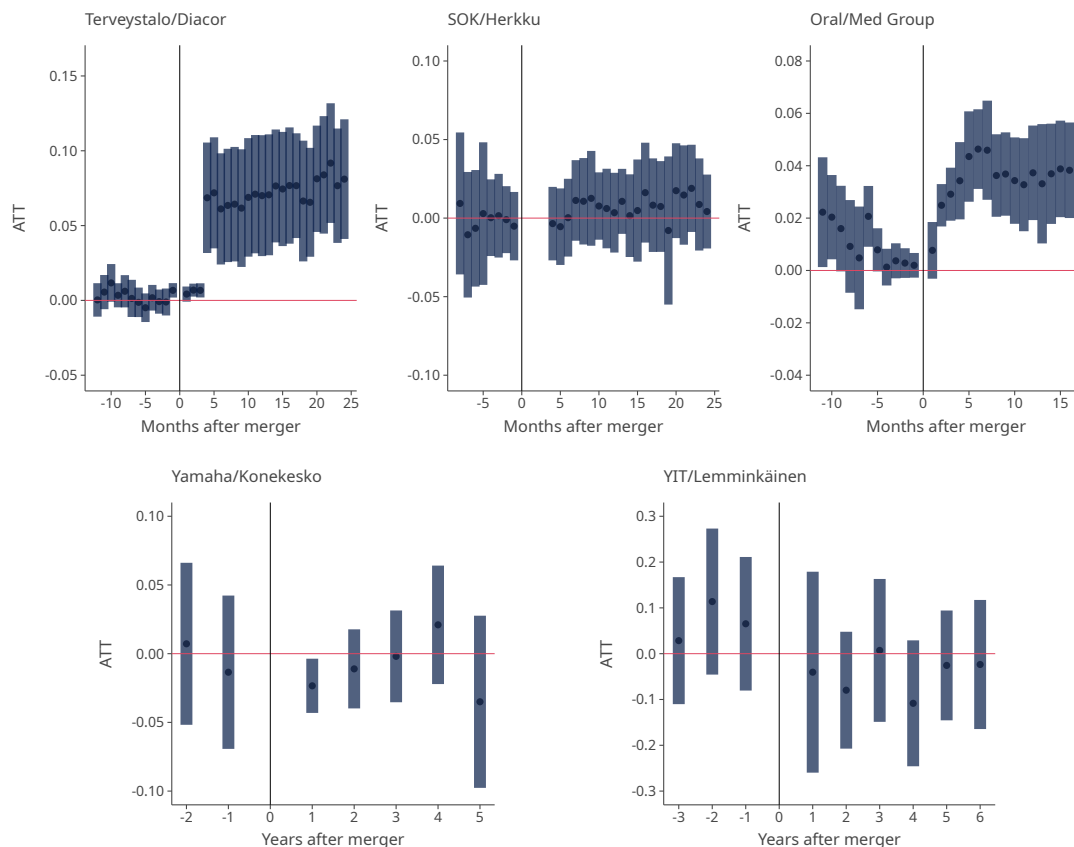


Figure 2: Event-study estimates

*Note:* Dependent variable is the logarithm of price. Event study is done using yearly data in the Yamaha/Konekesko and YIT/Lemminkäinen mergers and using monthly data in the Terveystalo/Diacor, SOK/Herkku and Oral/Med Group mergers.

Next, we present the price effects of the mergers separately for the acquired and the acquiring firms. These results are shown in Panel A and Panel B, respectively, of Table 5. The dependent variable in all regressions is the logarithm of price, and the control group consists of competitors in the non-overlap markets. Lemminkäinen ceased to exist as a separate entity after the merger, so we are unable to report separate effects for YIT and Lemminkäinen.

The results indicate a statistically significant price increase of approximately 16% for the acquired Diacor in the Terveystalo/Diacor merger and 5% for Med Group in the Oral/Med Group merger. Conversely, for Herkku in the SOK/Herkku merger, we observe a significant price decrease of 10%. The Yamaha/Konekesko merger shows no statistically

significant price effect for the acquired Yamarin Cross products.<sup>15</sup>

Based on the estimated results for the acquirer, the Terveystalo/Diacor merger resulted in a small but statistically significant price increase of 2% for Terveystalo. The Yamaha/Konekesko merger shows a weakly significant price decrease of 4% for Buster boats, while the SOK/Herkku and Oral/Med Group mergers show no statistically significant price effects for the acquirer.

Interestingly, while for the SOK/Herkku merger, we observe no statistically significant effect on aggregate, we observe a large and highly statistically significant effect on the target and no effect on the acquirer. This disparity arises because, in the estimation that includes both the target and the acquirer, the target is assigned a much smaller weight compared to the acquirer. The small weight reflects the fact that pre-merger the target only had a small market share compared to the acquirer.

Table 5: Effects of mergers on prices of the acquired and the acquirer

<b>Panel A: Effect on acquired</b>				
	Terveystalo/Diacor	Yamaha/Konekesko	SOK/Herkku	Oral/Med Group
<b>Log(price)</b>				
ATT	0.1456*** (0.0141)	0.0101 (0.0110)	-0.1105*** (0.0178)	0.0442*** (0.0090)
N	393,088	760	4,442	142,061
<b>Panel B: Effect on acquirer</b>				
	Terveystalo/Diacor	Yamaha/Konekesko	SOK/Herkku	Oral/Med Group
<b>Log(price)</b>				
ATT	0.0232** (0.0092)	-0.0368* (0.0191)	0.0148 (0.0099)	0.0009 (0.0068)
N	422,609	837	6,705	150,528

Dependent variable is the logarithm of price. Standard errors (in parentheses) are clustered by clinic, boat model, product, and clinic in the order corresponding to columns 1 through 4. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In the Appendix, we provide results from several robustness checks. As mentioned in the previous section, for every merger, we present results from a specification without weights, and for the YIT/Lemminkäinen and SOK/Herkku mergers, we provide results from a specification where, instead of a control group, the counterfactual is constructed based on the pre-merger trend. In addition, for the Yamaha/Konekesko merger, we present results from a specification where, instead of a boat model fixed effects, we con-

<sup>15</sup>We have also separately estimated the merger's effect on Yamarin's non-overlapping fiberglass boats and obtained a slightly negative, but not statistically significant, estimate.

trol for product characteristics. This specification allows the merger’s effect to also be identified from new models introduced after the merger. The results of all these robustness checks are provided in separate Appendix sections for each merger. Overall, the results from the robustness checks do not change our main conclusions discussed above.

In addition to the robustness checks, we present results where, instead of price, we use a measure of product quality as the outcome. For the Yamaha/Konekesko merger, we use model reviews from the largest industry magazine as the outcome. For the healthcare mergers, we use product variety as a measure of product quality. In all these analyses, the studied mergers show no statistically significant impact on the quality measure.

## 5.2 Entry and market concentration

In this section, we document the evolution of market concentration surrounding the mergers. Figure 3 shows the development of the Herfindahl-Hirschman Index (HHI) in product markets where there was overlap between the merging parties. In the grocery retail merger, we do not report the change in the HHI post-merger because we only observe national sales and are unable to calculate the evolution of the HHI at the affected local markets. For the mergers YIT/Lemminkäinen and Yamaha/Konekesko, we find that the impact on market concentration was smaller than what pre-merger market shares would have predicted, and that HHIs have decreased, with the decline being more significant in road maintenance.

In the motorboat market, the HHI shows a slight decline before the merger, which can be attributed to the dominant aluminum boat manufacturer, Buster, losing market share to Yamarin, which began producing aluminum Yamarin Cross boats in 2011.<sup>16</sup> After the merger, the HHI initially rises but then declines slightly. Notably, the increase in HHI is only about 60% of what would have been predicted based on pre-merger market shares. Pre-merger market shares would have indicated a delta HHI of 1,344 while the observed change in HHI between 2017 and 2018 is only 803. This is primarily due to the growth in market share of Faster boats and the entry of new aluminum boat brands, such as Falcon (manufactured by Bella Boats) and the Russian VBOATS, into the market starting in 2018.<sup>17</sup>

The road maintenance market can be considered highly concentrated, largely due to Destia’s (former government monopoly) significant market share. The HHI for new contracts varies considerably from year to year, as the limited number of newly tendered contracts can easily lead to high annual market concentration. A decline in HHI was

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<sup>16</sup>Buster’s market share was approximately 60% in 2011, dropping to around 30% by 2017.

<sup>17</sup>The merging parties have also somewhat reduced their product range following the merger. Buster’s lineup featured an average of 22 different boat models before the merger, dropping to 17 afterward. Similarly, the number of aluminum Yamarin Cross models decreased from nine to seven, while Yamarin’s other lineup averaged 20 models before the merger and 14 afterward. This reduction in the product range may have contributed to the decline in market share and could also partially result from it.

observed after 2016 as Lemminkäinen increased its share relative to the largest market players. The HHI rises with the merger of Lemminkäinen and YIT, but as seen in Figure 3, it reached its lowest level of the review period in 2023. This decline is primarily due to the entry of new competitors into the market in 2020.

In contrast to the motor boat and road maintenance markets, in the two healthcare mergers, there is no new entry and the HHI remains constant or slightly increasing after the initial increase after the merger. In both the Turku and Helsinki subregions, areas affected by the Terveystalo/Diacor merger, additional acquisitions have further consolidated the market.

Overall, we find that prices tended to increase in product markets where no entry occurred following mergers, whereas in markets where entry did occur, prices either remained stable or decreased. This finding provides support for the view that mergers are more likely to have harmful effects in markets with high entry barriers. However, too strong conclusions should not be drawn from this observation since the mergers also differ from each other in many other dimensions. One limitation of our results on entry is that we cannot fully determine whether the observed entry would have occurred absent the merger. In the motorboat market, the timing of entry suggests it would have happened regardless of the merger. However, in the road maintenance market, entry occurs clearly after the merger, making it more ambiguous whether it would have taken place absent the merger.



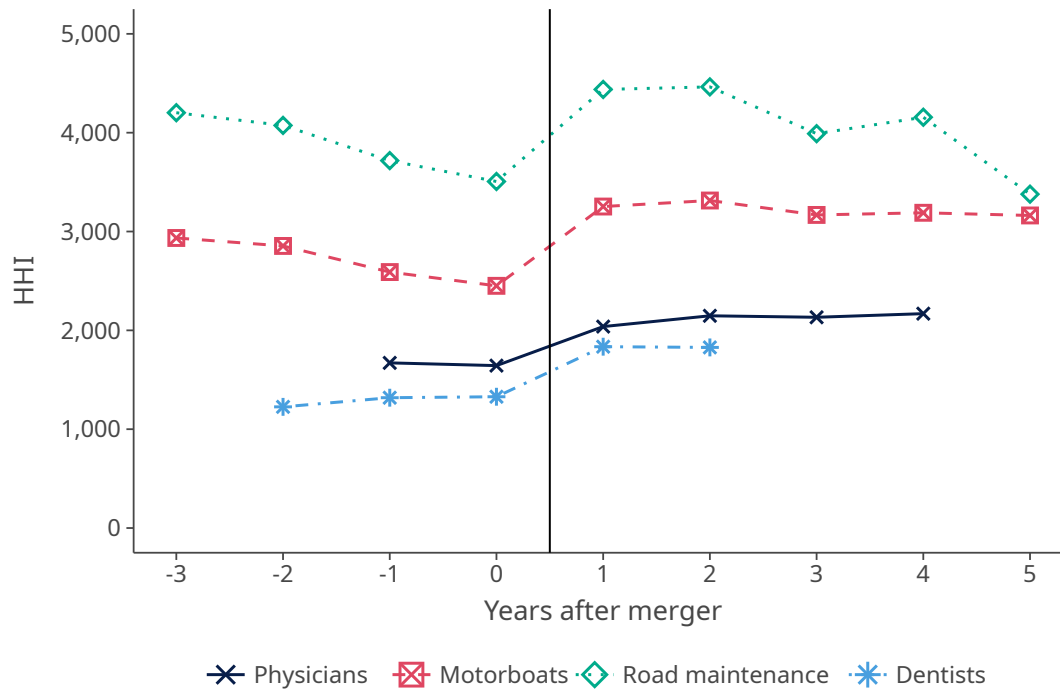


Figure 3: Evolution of HHI in overlapping markets

*Note:* Figure graphs the evolution of HHI in product markets where there was overlap between the merging parties. For the Terveystalo/Diacor merger, we plot the weighted average HHI in private physician services in the Helsinki and Turku sub-regions, using the sum of total revenues in 2017 as weights. For the Yamaha/Konekesko merger, we plot the HHI in aluminum motorboats. For the YIT/Lemminkäinen merger, we calculate market shares based on the value of the road maintenance contracts that are active in each year. Alternatively, we could have used only new contracts, which would respond faster to new entry but would also increase random variation. Finally, for the Oral/Med Group merger, we calculate the HHI as the weighted average of HHIs in the overlapping municipalities, again using the revenues of 2017 as weights.

### 5.3 Mergers and product markets outside the main sample

In this section, we briefly present results from the mergers and product markets outside our main sample. In the accommodation market, Scandic acquired Restel in December 2017. The merging parties were the two largest hotel chains in Finland, operating hotels in 12 overlapping municipalities with combined market shares ranging from 20-30% to 50-60%. The FCCA approved the merger with conditions, requiring the parties to divest hotels in three overlapping municipalities and prohibiting them from acquiring the rights to operate hotels under construction during the merger review in two municipalities.

In the Scandic/Restel merger, we were unable to obtain a dataset, where we could observe the prices charged by different hotels and hotel operators. However, we are able to track the average prices on a monthly and municipal level using accommodation statistics provided by Statistics Finland. In the Appendix F, we follow the price development separately for the municipalities where the parties had overlapping activities but were not required to divest hotels, the municipalities were only one or neither of the merging

parties was active, and in the municipalities where the parties were required to divest a hotel.

We do not find significant differences in the pricing trends post-merger between the municipalities where the parties had overlapping activities and the municipalities where the merger had no impact on competition. This would indicate that the merger did not result in price increases. We also do not find differences in the pricing trends between the non-overlap municipalities and municipalities, where the parties were ordered to divest hotels. Some caution should be taken when interpreting these results because, as noted, we do not observe prices at the hotel level, and changes in average prices could also reflect other developments in the market, such as lower-priced hotels winning or losing market share to more expensive hotels.

The merger between Terveystalo and Diacor also impacted competition in the occupational healthcare market. Occupational healthcare includes preventive care, medical treatment for work-related issues, and is often complemented by broader healthcare services depending on the employer's arrangements. In the occupational healthcare market, the merging parties were estimated to have a market share between 40-50% in the Helsinki sub-region and 30-40% in the Turku sub-region. The effects of the Terveystalo/Diacor merger on the occupational healthcare market were analyzed by the FCCA in its investigation of a proposed merger between Mehiläinen and Pihlajalinna, two large firms also active in the occupational healthcare market (FCCA, 2020). Based on the analysis performed by FCCA, the merger resulted in 5-15% higher prices for Diacor customers and had no statistically significant effects on the existing Terveystalo customer base. We describe the analysis done by the FCCA more thoroughly in Appendix A.

For the YIT/Lemminkäinen merger, we have not been able to collect price data from the product markets not included in the main sample. The merger also affected competition in housing construction and the construction of large infrastructure projects. In both markets projects differ among many characteristics and controlling for such differences in project characteristics in order to obtain a credible estimate for the merger's price effect was not feasible. The largest dataset on large construction projects in Finland that we identified is maintained by RPT Byggfakta. According to this database, YIT's current market share is only 15%, which is significantly lower than the combined market share of YIT and Lemminkäinen reported in the authority's decision. As we have not been able to compare the database used by the authority with the RPT Byggfakta database, this discrepancy should be interpreted with caution.

## 6 Additional results

### 6.1 Elimination of double-marginalization

The merger in the motor vehicles industry had also a vertical element. The acquirer (Yamaha) in addition to manufacturing motor boats also manufactures outboard motors. The target was part of a conglomerate group that included several businesses focused on retail sales of consumer goods. Before the merger, the acquirer and the target had a sales distribution agreement that granted the target an exclusive right to sell the outboard motors of the acquirer in Finland. Post-merger, the acquirer started to distribute its own motors directly to consumers. This arrangement between the merging parties potentially resulted in double marginalization. Before the merger, the acquirer, acting as manufacturer, and the target, acting as a retailer, each set their prices above marginal cost to maximize their individual profits, leading to a "double" markup on the final product. Double marginalization could have been eliminated pre-merger through alternative contractual arrangements, such as a two-part tariff. However, the FCCA concluded in its analysis that the merger would lead to the elimination of double marginalization, suggesting that such contract types were not used by the merging parties prior to the merger.

We have collected data on the prices of Yamaha motors in Finland, Norway, and Denmark. The merger only affected the retail sales of the motors in Finland, and had no effect on the manufacturing of motors. Due to this, the prices of Yamaha motors in Denmark and Norway act as a good control group when analyzing the impact of the merger on the retail prices of motors in Finland.<sup>18</sup>

In Figure 4, we plot the development of average prices before and after the merger in the treatment and in the control group. The prices are expressed in euros per horsepower. Pre-merger Yamaha motors were around 5% to 10% more expensive in Finland than in the control group countries. Following the merger, prices in Finland aligned with those of the control group, indicating that the merger resulted in lower prices.

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<sup>18</sup>We have translated Danish and Norwegian kronors to euros using yearly exchange rates.

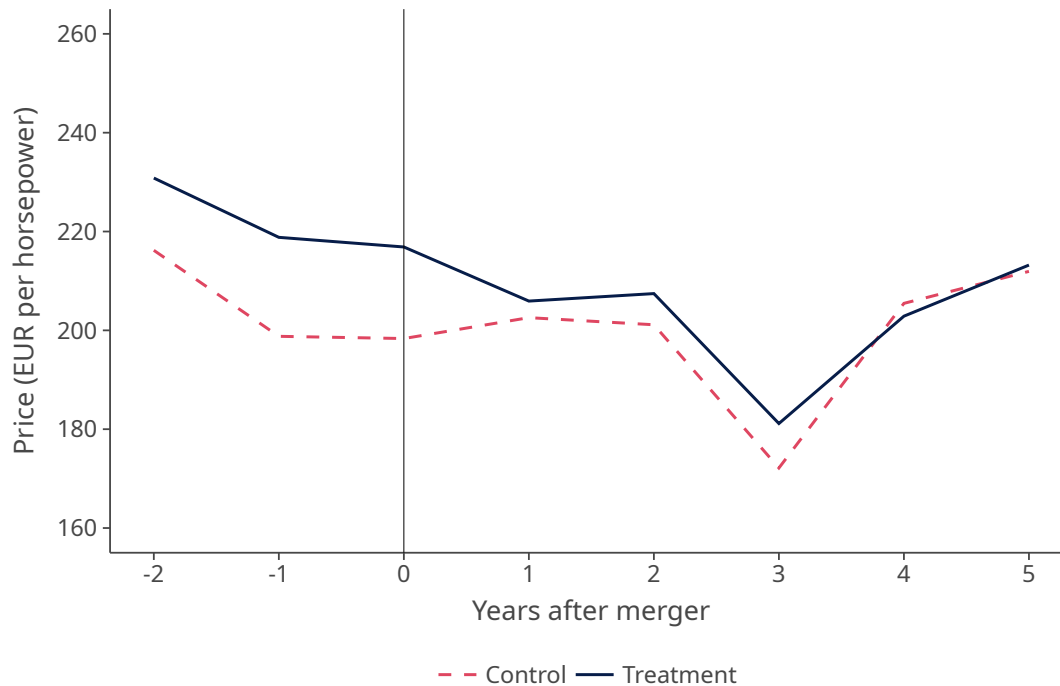


Figure 4: The price development of Yamaha motors in Finland compared to Denmark and Norway

*Note:* Figure graphs the price per horsepower of the same motor models in Finland compared to Denmark and Norway.

In Table 6, we present results from our difference-in-differences specification. In the first column, we include year and model-country fixed effects to the model. In this model, the price effect is identified from comparing the within model price changes in Finland and in the control group before and after the merger. In the second specification, we drop the model-country fixed effects and instead include product characteristics as control variables to the model. In this specification, models introduced after the merger are also used to identify the merger’s effect on prices.

The results indicate that the retail prices of Yamaha outboard motors decreased by 6-7% after the merger in Finland. In the Appendix B, we also report results from an event-study specification. In the event study, we do not find evidence of diverging price trends in Finland and in the control group before the merger. Overall, our results indicate that the elimination of double marginalization resulted in lower prices in the outboard motor market.

Table 6: Effect on the prices of Yamaha outboard motors

	Log(price)	
	(1)	(2)
ATT	-0.0575*** (0.0107)	-0.0740** (0.0327)
Year Fixed Effects	x	x
Motor-Country Fixed Effects	x	-
Country Fixed Effects	-	x
Controls for Product Characteristics	-	x
N	2,108	2,108

The dependent variable is the logarithm of price. Column 1 shows the results for the model that includes year and motor-country fixed effects, while Column 2 presents the results for the model that includes controls for product characteristics instead of fixed effects. Product characteristics consist of motor horsepower, horsepower squared, and a dummy variable for electric motors. Standard errors (in parentheses) are clustered by motor-country. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

A notable market development following the merger is a shift from selling motorboats without pre-installed outboard motors to many manufacturers now offering motorboats with pre-installed motors. While pre-merger consumers could choose and install any outboard motor on the motorboat they purchased, post-merger they were required to purchase a bundled product. However, it should be noted that even before the merger, most motorboat manufacturers had partnerships with specific outboard motor manufacturers, and consumers often opted to purchase motors from these partnered brands. Due to this, bundling might only have a limited effect on consumers in this particular market.

## 6.2 Pass-through of efficiencies

In the grocery retail merger, during the merger review process, the parties claimed that after the merger the acquirer would be able to operate the target stores more efficiently. According to the acquirer, these efficiencies would stem from reduced procurement costs and the acquirer's lower logistics expenses compared to those of the target. The FCCA in its merger analysis also assumed that the merger would result in efficiencies.

In this subsection, using product-level cost data, we evaluate whether the merger actually resulted in efficiencies. In our data, we observe a measure of costs that is the sum of purchasing price and logistic costs. We observe this only for the merging parties and, as a result, conduct the analysis simply by comparing costs before and after the

merger.<sup>19</sup> We conduct the before-after comparison in three different ways. First, we regress logarithm of the cost measure on a post-merger dummy and product fixed effects. In the second model, we add month of the year fixed effects. In the third specification, we first use pre-merger data to regress the logarithm of costs on a linear time trend and product fixed effects. In the second step, we use post-merger data and regress the residuals, obtained from the first step’s predictions, on a constant. In all specifications, we restrict the sample to include only the target.

The results are shown in Table 7. Depending on the specification, we find that post-merger costs decreased by approximately 12–16% for the target. In the Appendix C, we present results from the same specifications using retail prices as the outcome variable. Using this methodology, we find that post-merger prices in the target decreased by around 9%, which is consistent with the 10% decrease estimated in our main specification. Overall, these results suggest that the merger led to lower costs for the target stores, with 60–80% of these efficiencies being passed on to consumers through lower retail prices.

Table 7: Effect on the costs of the acquired grocery retailer

	Log(wholesale price)		Log(residual)
	(1)	(2)	(3)
ATT	-0.1395*** (0.0381)	-0.1335*** (0.0371)	-0.1756*** (0.0382)
Product fixed effects	x	x	x
Month of the year fixed effects	-	x	-
Linear time trend	-	-	x
N	2,237	2,237	1,778

In Columns 1 and 2, the dependent variable is the logarithm of wholesale price. Column 1 shows the effect for the baseline model with product fixed effects. Column 2 adds month of the year fixed effects. In Column 3, we regress residuals from a pre-merger regression of costs on a time trend and product fixed effects against a constant using post-merger data. Standard errors (in parentheses) are clustered by product. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In Figure 5, we plot results from an event-study specification. We observe that the retail price reductions occur directly after the merger and remain quite stable during our study period. In contrast, the cost reductions are only partially realized immediately after the merger. This pattern could potentially be explained by the remedy set by the

<sup>19</sup>We also observe the purchasing prices of one of the competitors but this data covers only a very short period before the merger.

FCCA, which required the acquirer to continue buying from the old wholesaler for a limited time period after the merger.<sup>20</sup>

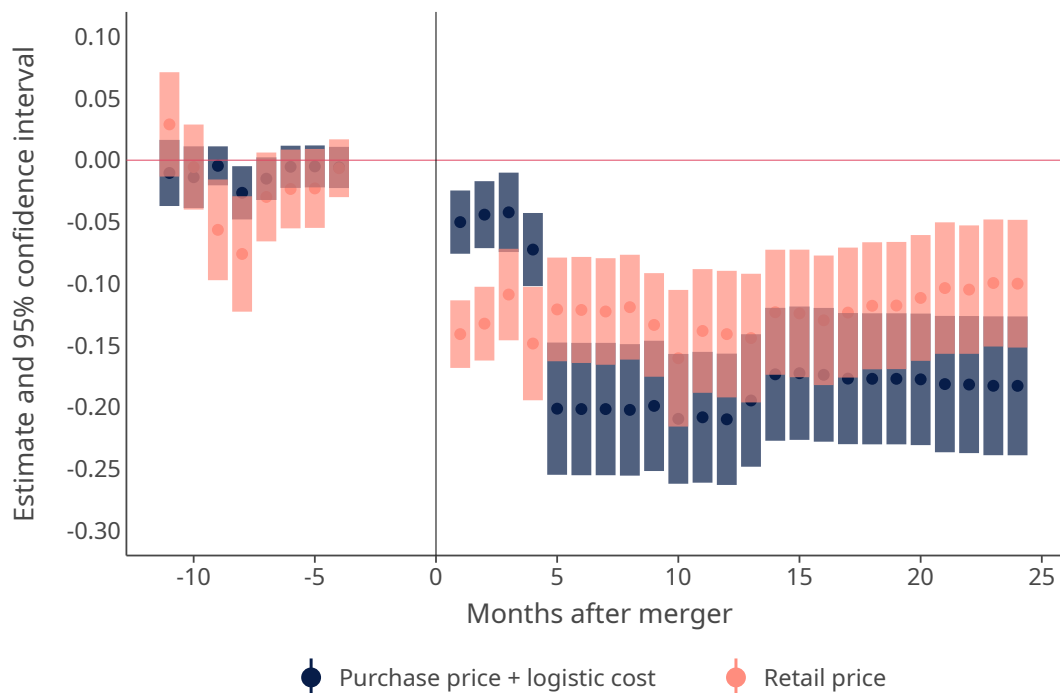


Figure 5: Event-study estimates for costs and retail prices

*Note:* Figure displays the event-study estimates for Herkku’s retail prices and combined purchase price and logistics costs, based on a model with product fixed effects and separate time dummies for each month, except the final month before the merger. As Herkku prices are unavailable for the last three months of 2017, September is used as the comparison point.

In the SOK/Herkku merger, our analysis focuses on the period from 2017 to 2020. At the beginning of 2021, some target stores were rebranded from the premium Herkku brand to the more budget-oriented S-market brand. Before the merger, Herkku was renowned for its high quality, while S-market is generally associated with affordability. This rebranding may have led to a reduction in store quality, potentially offsetting the benefits of the lower prices observed earlier. However, due to the limited scope of our data, which includes prices and sales for only 51 individual goods, we were unable to evaluate whether the rebranding affected product variety or customer satisfaction.

### 6.3 Pricing strategy

In the Finnish private physician market, the chains operate under a model in which physicians work in the clinic as independent contractors. The physicians set the prices of

<sup>20</sup>The full realization of cost reductions appears to have occurred before the expiration of the remedy requiring the acquirer to continue purchasing from the old wholesaler. This can probably be explained by the fact that the logistics company Tuko Logistics Osuuskunta began co-determination negotiations related to the closing of its operations already in summer 2018 (Yle, 2018).

their own appointment times and pay part of their revenue as "room-rent" to the chain. The chain sets the prices of diagnostic services such as medical imaging and laboratory tests. The merger directly affected the pricing incentives for diagnostic services set by the clinic but had only an indirect impact on appointment times, which are determined by the physicians.

To analyze how the merger affected the prices of appointment times and diagnostic services, we estimate the merger's effects separately for these two categories. Our main specification is used, where the control group consists of clinics in regions where neither or only one of the merging parties was active. The results are reported in Table 8, which shows that the prices of diagnostic services increased by 16% and the prices of appointment times by 3%. This indicates that the merger primarily affected the prices of diagnostic services, with a significantly smaller effect on the prices of appointment times. In Appendix A, we also provide event study estimates separately for diagnostic services and appointment times. We find no evidence of differing pre-trends in either diagnostic services or appointment times.

Table 8: Effects on prices for physicians' appointment times and diagnostic services

	Log(price)	
	(1)	(2)
ATT	0.0272** (0.0115)	0.1525*** (0.0372)
Treatment	Appointment times	Diagnostic services
N	31,710	506,733

The dependent variable is the logarithm of price. Column 1 shows the effect for physicians' appointment times, while Column 2 shows the effect for diagnostic services. The control groups consist of appointment times and diagnostic services, respectively, in rival clinics located in non-overlapping geographical markets. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In diagnostic services, the acquirer sets its prices uniformly throughout Finland. For the acquirer, we calculate the median price for each treatment separately and then divide the clinic-specific prices by the median price. More than 70% of the observations are equal to the median price, indicating that for most treatments the acquirer sets a single price for all clinics. Unlike in diagnostic services, we do not find evidence of uniform pricing in appointment times, which are set by physicians. Instead, we observe that the prices



of appointment times can vary even within a clinic, which is consistent with physicians pricing their appointment times independently.

If uniform pricing was implemented in the target’s clinics after the merger, the post-merger price changes in the target could merely reflect the pre-merger price differences between the acquirer and the target. We examine this in Figure 6. First, in the left panel, we plot the price difference between the target and acquirer clinics before and after the merger. We find that, prior to the merger, the acquirer was considerably more expensive than the target, but the price difference converges close to zero post-merger. Next, we calculate the average price difference for the three-month period prior to the acquisition and the average price change in the target clinics after the acquisition. The price change is determined by comparing prices from the three-month period before the merger to prices from the three-month period six months after the acquisition. The right panel of Figure 6 shows the correlation between these two measures.<sup>21</sup> The correlation coefficient is 0.94. Prices increase most for treatments with the highest pre-merger price difference and the least for treatments with the smallest price difference.

Both of the above observations provide strong evidence that the observed price effects in the target clinics for diagnostic services are driven by price harmonization. Post-merger, the uniform prices of the acquirer were installed in the acquired clinics. Since the acquirer was significantly more expensive than the target prior to the merger, this price harmonization led to higher prices in the target clinics.

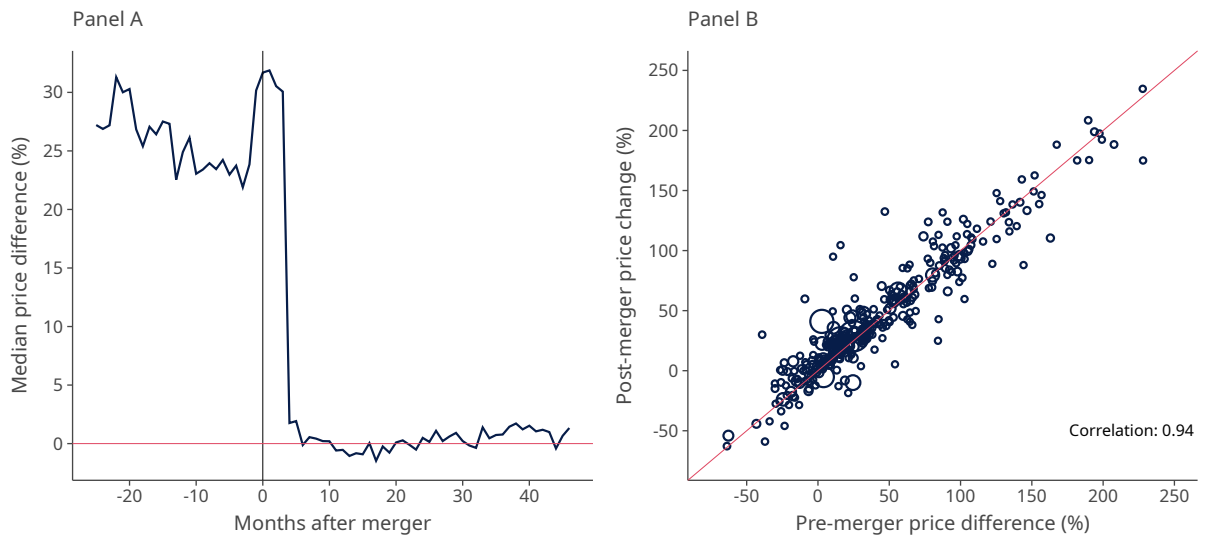


Figure 6: Price harmonization in diagnostic services

*Note:* Panel A of the figure depicts the price difference between the target and acquirer clinics before and after the merger. Panel B presents, on the x-axis, the average price difference between the target and the acquirer for each medical treatment during the three-month period prior to the acquisition, and on the y-axis, the average price change for each medical treatment in the target clinics following the acquisition.

<sup>21</sup>For a similar analysis that also accounts for smaller acquisitions in the market see Buri et al. (2024).

We have also examined price harmonization in the dental market. Although the evidence for uniform pricing in the dental market is not as strong as in the physician market, we do observe that for some treatments, prices in the acquirer’s clinics appear to be relatively similar in all locations. To illustrate this, in Figure 7, we plot the price development of the merging parties and the primary control group for four popular treatments.

In three of the studied treatments, we find evidence of price convergence between the target and the acquirer post-merger. For basic oral examinations, there is strong evidence of price harmonization. Post-merger, price levels are similar and display a similar seasonal pattern, with lower prices during the summer months. Since the acquirer had lower prices for oral examinations prior to the merger, price harmonization appears to have resulted in slightly lower prices in the target clinics. For dental X-rays and two-surface fillings, we also observe evidence of price harmonization, but in these cases, it led to higher prices in the target clinics. For the fourth treatment, periodontal treatment, we do not find evidence of price harmonization. Overall, similar to our main results, this analysis does indicate that the merger in the dental market had a more significant effect on the prices of the target than on the acquirer. It also underscores the heterogeneous effects of the Oral/Med Group merger across different medical treatments.

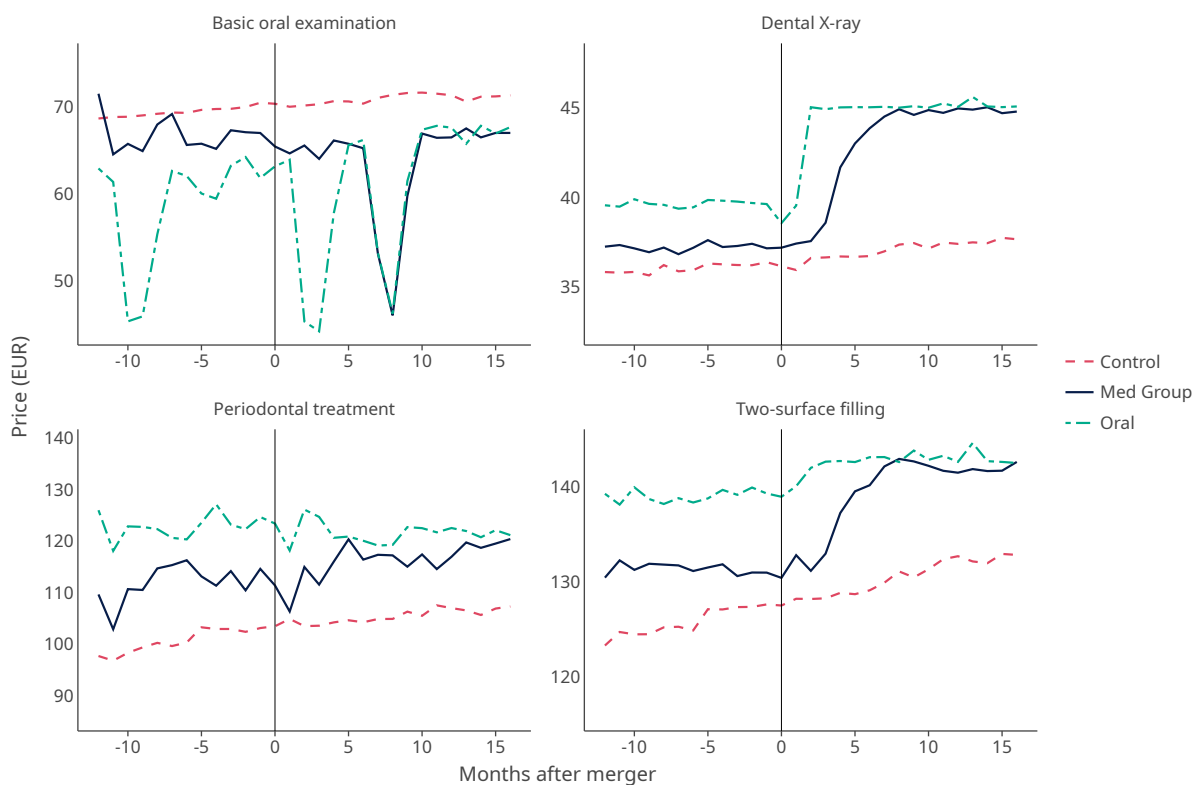


Figure 7: Evolution of prices in popular dental treatments

In the healthcare mergers, we have not been able to study how the merger affected

clinical quality. In the Terveystalo/Diacor merger, the parties had a large price difference prior to the merger, which could reflect quality differences between the parties. Buri et al. (2024) explores the effects of smaller acquisitions in the dental and physician markets, finding that such acquisitions often lead to price increases. In the physician market, Buri et al. (2024) also identifies evidence of price harmonization, and examines factors contributing to price differences between independent clinics and chains through a consumer survey. Interestingly, the survey reveals no significant differences in how consumers rate the quality of care between independent and chain clinics. However, one explanation supported by Buri et al. (2024) is that independent clinics owned by non-profit organizations tend to offer lower prices. This might also explain why Diacor, owned by a non-profit foundation before the merger, was considerably cheaper than Terveystalo.

Although we have not analyzed the impact of mergers on clinical quality, as mentioned at the end of Section 5.1 we have assessed their effect on the range of treatments and medical specialties offered by the clinics. Findings for both healthcare mergers are presented in the Appendix. In both cases, we find no statistically significant changes in the number of treatments or specialties offered by the merging parties.

#### 6.4 Assessing remedies

In the dental merger, the merging parties were required to divest clinics in four municipalities, where their combined market shares exceeded 40%. Three of the divested clinics were sold to Hammasvelho and one to Terveystalo. In Figure 8 we have plotted the average price development in all four municipalities before and after the merger. To construct the overall price index, we first calculated a separate price index for each treatment at a given clinic, using the month prior to the merger as the base month. We then computed a weighted average across all treatments offered by the clinic, using the number of visits for each treatment in the year before the merger as weights. In the figure, we plot the price development separately for the divested clinic, the clinic that continued to be operated by the merging parties, and for the local competitors. In general, the largest price changes post-merger are observed in the divested clinic. In two of the divested clinics, prices seem to decrease, and in one to increase.

To assess the price changes more systematically, we have estimated a difference-in-differences specification where the treatment group consists of the clinics in the four municipalities and the control group of clinics in municipalities where neither or only one merging party was active. We find no statistically significant change in prices in the four municipalities after the merger. We report the results from this regression in Appendix E. Overall, the results would suggest that divestments were successful in curbing price increases in the four municipalities.

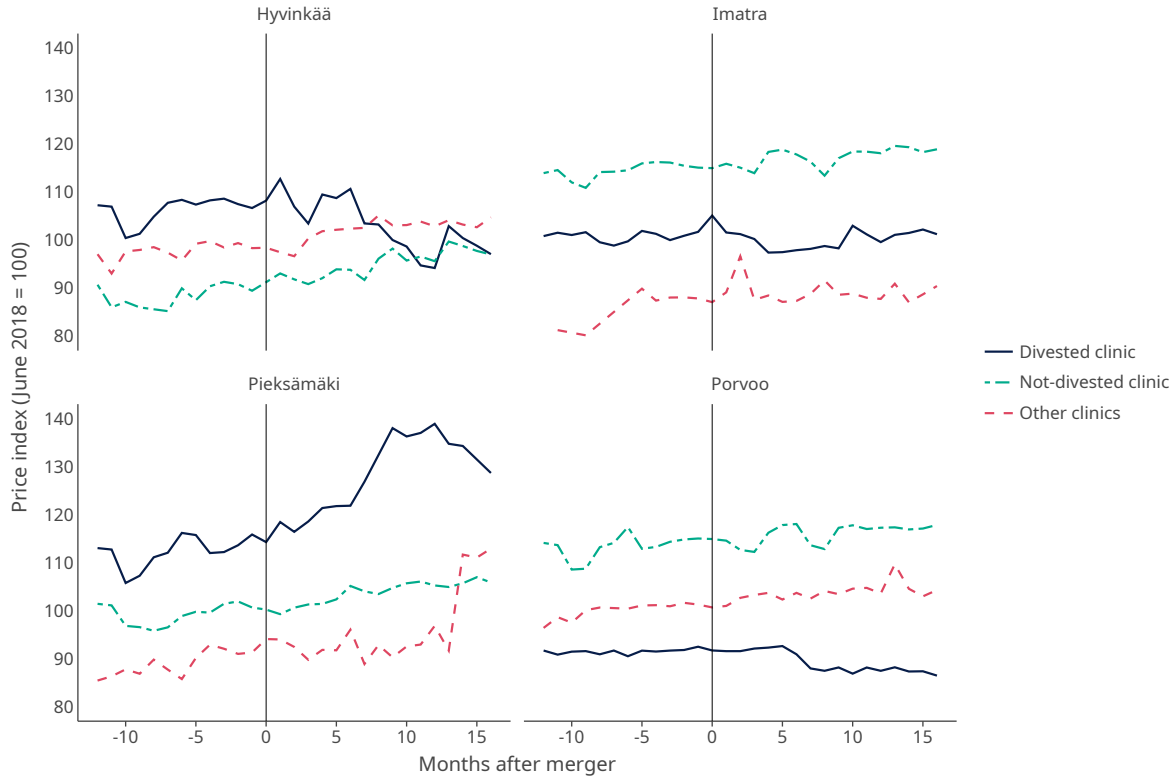


Figure 8: Evolution of prices in divested clinics

*Note:* Figure shows the average price development in the four municipalities before and after the merger. Prices are indexed to the month prior to the merger, with weights based on the number of visits for each treatment in the year before the merger. The price development is plotted separately for the divested clinic, the clinic retained by the merging parties, and the local competitors.

A second merger in our sample that was approved with conditions involved the grocery retail sector. The acquirer, a vertically integrated company with its own wholesale business, ultimately supplied the target stores through its internal wholesaler. However, as part of the remedies, the merging parties were required to continue purchasing from their previous wholesaler, Tuko Logistics, for a limited period. This measure aimed to prevent disruptions to the operations of Tuko’s other major owners, Wihuri and Heinon Tukku, which primarily operated in the foodservice market and could have been affected by a sudden drop in Tuko’s purchasing volumes. Due to limited data on the wholesale market, we cannot comprehensively assess the effects of this remedy. However, we provide a brief overview of post-merger developments. Today, both Wihuri and Heinon Tukku—now operating under a new name—remain active in the market. However, Tuko quickly exited the market after the merger (Yle, 2018). Market experts have identified the absence of a competitive independent wholesaler as a factor limiting competition in the Finnish grocery retail sector (see, e.g., Kivilahti, 2023).

## 7 Conclusion

In this paper, we studied five mergers approved by the Finnish Competition and Consumer Authority after an in-depth review. Using a difference-in-differences methodology, we found that the studied mergers had highly heterogeneous effects on prices. Two mergers resulted in price increases, two had no statistically significant effect on prices, and one resulted in lower prices. The unweighted average price effect across the five mergers is close to zero. We find that in industries where entry occurred after the merger, prices did not increase post-merger. Overall, based on our findings, the authority's decision to approve the mergers was justified in most cases. However, one case provided particularly strong evidence of significant post-merger price increases, indicating that blocking the merger would have benefited consumers.

We also report several interesting findings at the merger level. In the grocery retail merger, using unique product-level cost data, we show that a significant portion of the merger efficiencies were passed on to consumers. In the motor boat merger, we demonstrate that the elimination of double marginalization resulted in lower prices in the outboard motor market. In the healthcare merger, the observed price effects were driven by price harmonization. The acquirer set prices uniformly across Finland, and post-merger the uniform prices were extended to the acquired clinics. Since the acquirer had significantly higher prices than the target before the merger, price harmonization resulted in higher prices at the acquired clinics.

Our study has three key limitations. First, our analysis is limited to assessing the impact of half of the mergers approved by the authority after an in-depth review during the study period. Second, while we report some results regarding product and service quality, we are unable to systematically assess the effects on quality. The third limitation is that our data do not cover all relevant product markets affected by the studied mergers. In particular, in the construction industry merger, we only observe one of the several relevant product markets.

Although limitations prevent us from drawing strong conclusions about whether Finnish merger control has been too lax during our study period, some policy insights can be drawn from the paper. Based on our results, mergers approved by the authority after in-depth review had significant impacts, both negative and positive, on consumers. Our findings also highlight the critical role of the pricing strategies, market entry barriers, and potential efficiencies in shaping post-merger price effects. These findings emphasize the benefits of a thorough, case-by-case review in merger control. Incorrect decisions can have significant negative effects on consumers, and accurately predicting post-merger outcomes requires a comprehensive evaluation of case-specific factors.

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## Appendix A. The merger between Terveystalo and Diacor

Terveystalo Healthcare Oy's (Terveystalo) acquisition of Diacor Terveyspalvelut Oy (Diacor) was approved on March 23, 2017. Both Terveystalo and Diacor are healthcare service providers, offering services to employers, private individuals, and insurance companies. Additionally, Terveystalo provides outsourced services to the public sector (FCCA, 2017a).

The Phase II investigation found that the two companies' operations had limited geographical overlap due to their distinct networks of service locations. Terveystalo was a nationwide provider with a particularly strong market position in Northern and Eastern Finland, while its market share in the Helsinki metropolitan area was significantly lower than elsewhere in the country. Diacor, by contrast, was a regional provider, with its operations concentrated in the Helsinki metropolitan area and Turku.<sup>22</sup> The merging parties had a combined market share of around 30-40% in the Helsinki sub-region, and 30-45% in the Turku sub-region (FCCA, 2017a).

The Phase II review concluded that sufficient competition would remain in the healthcare services market after the acquisition. Based on survey evidence, the most significant competitor, Mehiläinen, had been a considerably closer competitor to Terveystalo than Diacor before the acquisition (FCCA, 2017a). Additionally, other competitors, such as Pihlajalinna and OP-Pohjola, had announced plans to significantly expand their operations in the near future.

### Additional results and robustness

Figure 9 illustrates the evolution of prices in the private physician market for Terveystalo, Diacor, and the control clinics. The figure is constructed by first creating a separate index for each medical procedure, calculated as the price divided by the mean price in the month prior to the merger. These indices are then averaged using a weighted mean, with the weights based on the number of visits in the year preceding the merger. The figure shows a significant price increase for Diacor a few months after its acquisition.

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<sup>22</sup>Diacor operated 13 clinics in the Helsinki metropolitan area and one clinic in Turku.

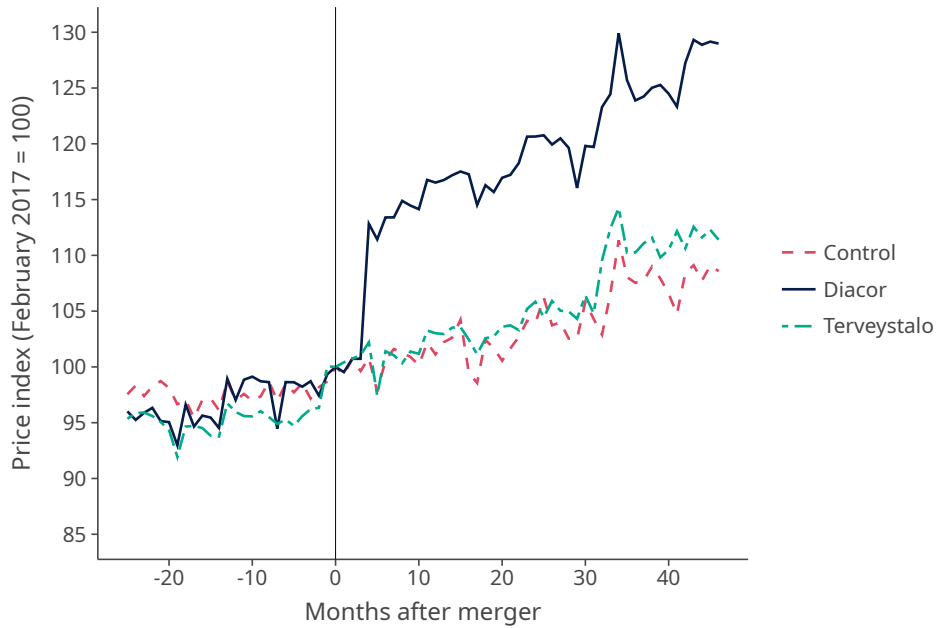


Figure 9: Evolution of prices in the private physician market

*Note:* Figure graphs the price evolution in the private physician market for Terveystalo, Diacor, and control clinics. Prices are indexed to the month prior to the merger, with weights based on the number of visits for each procedure in the year before the merger.

In Section 6.3, we estimated the effects of the merger separately for diagnostic services and physician appointment times. Figure 10 presents the corresponding event-study estimates. As discussed in the main text, we find no evidence of differences in pre-trends, with none of the point estimates prior to the merger being statistically significant. After merger, there is a significant increase in the prices of diagnostic services, while the effect on the prices of appointment times is much smaller.

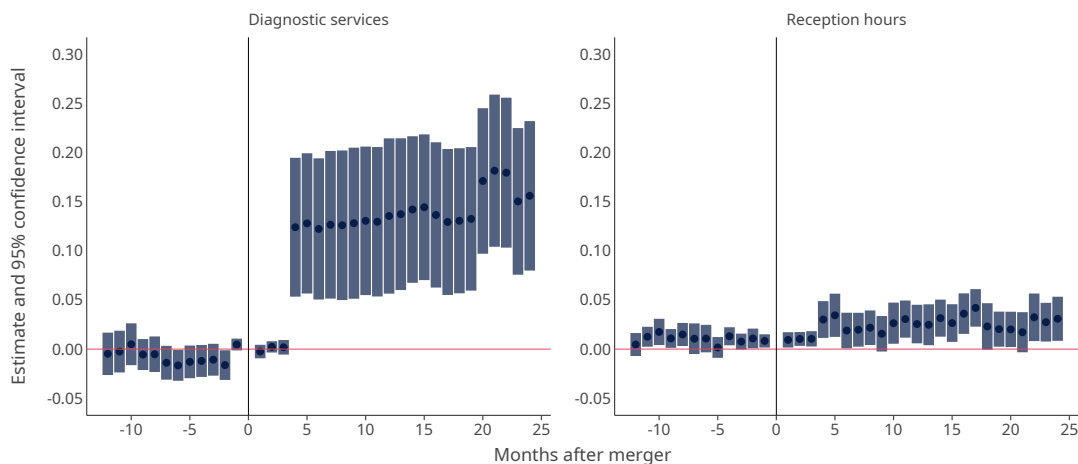


Figure 10: Event-study estimates for diagnostic services and appointment times

Table 9 presents the results for treatment variety in physician services. In column 1, the dependent variable is the number of unique medical procedures offered at a clinic in a

given month, excluding rare procedures with fewer than 1,000 total visits in the year prior to the merger. In Column 2, the dependent variable is the number of different physician specialties available at the clinic. Both point estimates are negative, but not statistically significant.

Table 9: Results for treatment variety in physician services

	Log(# of medical procedures) (1)	Log(# of physician specialties) (2)
ATT	-0.0399 (0.0690)	-0.0599 (0.0560)
N	9,470	9,538

In Column 1, the dependent variable is the logarithm of the number of unique medical procedures in a given clinic, while in Column 2, it is the logarithm of the number of medical specialties. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Lastly, we present the unweighted price effect estimates in Table 10. These estimates are larger and closer to those observed separately for Diacor, compared to our main specification. This is because, in the unweighted approach, Diacor receives a larger weight relative to Terveystalo than in the main specification.

Table 10: Unweighted results for private physician services

	Log(price)	
	(1)	(2)
ATT	0.1395*** (0.0362)	0.1498*** (0.0362)
Control	Rival clinics in non-overlap markets	Rival clinics in overlap markets
N	538,443	650,845

The dependent variable is the logarithm of price. In Column 1 the control group consists of rival clinics located in non-overlapping geographical markets. In Column 2 the control group consists of clinics in overlapping markets. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Occupational healthcare services

The merger between Terveystalo and Diacor also impacted competition in the occupational healthcare market. The Finnish occupational healthcare system provides preventive and primary healthcare services to employees, funded jointly by employers and the

Social Insurance Institution (Kela). Employers are required by law to arrange at least preventive care, while additional medical services are optional but common. Prior to the merger both of the firms were active in the occupational healthcare market. The geographical activity of both parties resembles that in the physician market. Terveystalo operated a nationwide network of clinics and Diacor was active in the Helsinki and Turku sub-regions. In the occupational healthcare market, the merging parties were estimated to have a market share between 40-50% in the Helsinki sub-region and 30-40% in the Turku sub-region (FCCA, 2017a).

The effect of the merger on the occupational healthcare market was studied by the FCCA in a merger investigation related to Mehiläinen's planned acquisition of Pihlajalinna in 2020 (FCCA, 2020). The analysis was conducted using administrative claims data from Kela. The data used in the analysis did not directly reveal the treatment-level prices charged by the healthcare companies from occupational healthcare customers. Instead, the data included the total costs and the number of employees covered by the agreement. Additionally, the dataset included the number of visits across different service segments. The authority used total employee-specific costs as the primary outcome variable in the analysis while controlling for the number of visits in different segments.

Similarly to this study, the effects of the merger were estimated using a difference-in-differences strategy. The authority used several different control groups. One of the control groups included all customers not directly affected by the merger, while another specification restricted the control group to customers not directly affected by the merger but located in the 15 largest cities in Finland.

The results indicated that the merger resulted in 5-15% higher prices for Diacor customers and had no impact on the existing customers of Terveystalo.<sup>23</sup> The price estimates for Diacor were statistically significantly different from zero at the  $p < 0.01$  level. The results of the occupational healthcare market align with the results from the physician market. Based on the results, the merger resulted in higher prices in both markets in former Diacor clinics and had a small or negligible impact on existing Terveystalo clinics. Similarly to the physician market, there has not been major entry in the occupational healthcare market in Helsinki or Turku sub-regions after the merger.

## **Appendix B. The merger between Yamaha and Konekesko**

The merger between manufacturers of motor vehicles Yamaha and Konekesko was approved in April 20, 2017, and completed in June 2017. In this transaction, Yamaha Motor

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<sup>23</sup>In the original decision the estimated price effects are not disclosed because they were considered a trade secret at that time. However, trade secrets have been later re-evaluated, and now the price effects are given using the range mentioned in the text.

Europe N.V.<sup>24</sup> and Inhan Tehtaat Oy Ab, a member of Yamaha's corporate group that manufactures Buster boats, acquired from Konekesko Oy the production and sales of Yamarin and Yamarin Cross motorboats<sup>25</sup>, the sales of Finnmaster, TG-Boats, and Zodiac motorboats, as well as the import and sales of Yamaha's recreational machinery and equipment, such as outboard motors (FCCA, 2017b).

This was primarily a horizontal merger, where two competing boat manufacturers combined into a single entity. However, for outboard motors, the merger also resulted in vertical integration, as before the merger, Konekesko had exclusive rights to sell Yamaha motors at the wholesale level in Finland. Yamaha had previously acquired Buster from Fiskars in 2015. Through the Buster acquisition, Yamaha began selling Buster boats (that came with Yamaha motors) directly to retailers in Finland, though Yamaha motor sales still took place through Konekesko's wholesale distribution.

Figure 11 shows the vertical market structure before the merger of Yamaha and Konekesko. The industry is vertically integrated, with distribution networks divided by motor manufacturer. In Finland, the most common motor brands are Yamaha, Honda, and Mercury. Following the merger, Yamaha sells motors directly to its distribution network in Finland. The Otto Brandt Group imports Honda motors and sells them to independent dealers and directly to consumers. In addition, Otto Brandt manufactures and sells Silver and Terhi boats and represents Faster boats. Mercury motors are part of the U.S.-based Brunswick Group, which manufactures and sells Bella, Falcon, and Flipper boats to its distribution network in Finland. Mercury motors are sold directly to the distribution network without a separate wholesale layer.<sup>26</sup>

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<sup>24</sup>Yamaha Motor Europe N.V. is a part of the Japanese Yamaha, which sells and manufactures various motorized vehicles, boats and their outboard motors, as well as a range of industrial products.

<sup>25</sup>Yamarin boats are made of fiberglass, while Yamarin Cross boats are made of aluminum. The latest fully fiberglass Yamarin boats were excluded from the transaction. These included the Yamarin 81 DC, launched in spring 2016, as well as the 81, 66, and 64 models, which were still unreleased at the time. These models were sold to Oy Otto Brandt Ab in 2018.

<sup>26</sup>AMT boats switched their partnership from Yamaha to Honda in 2020. Furthermore, Suvi boats were part of Konekesko from 2008 but were sold to a newly established company in February 2017 and continued as a Yamaha partner.

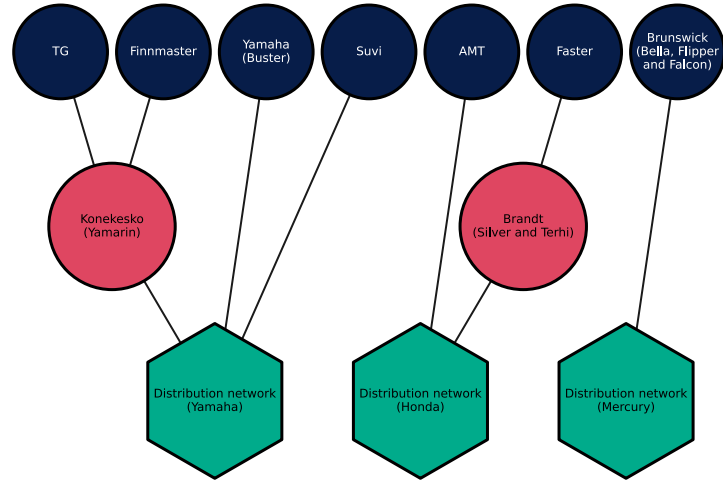


Figure 11: The vertical market structure of motorboat manufacturing and sales before the merger

*Note:* Boat manufacturers without sales representation for other manufacturers are marked in dark blue. Among the boat manufacturers, Yamaha (Buster), Suvi, AMT, and Brunswick (Bella, Flipper, and Falcon) sold their boats directly to their own retail networks. Boat manufacturers who also act as sales representatives or wholesalers for other manufacturers' boats are marked in red. Distribution networks marked in green are divided based on motor brand. TG switched to Honda outboard motors in 2022.

Boat manufacturers collaborate with motor manufacturers, and boats are designed for use with a specific motor. At the wholesale level, boats and motors are sold both separately and as combined packages. For consumers, motorboats and their outboard motors are generally sold together at package prices.

Motorboats vary in their features and intended use. They differ in characteristics such as size, deck structure, motor power, and manufacturing material.<sup>27</sup> Survey evidence indicates that the construction material of the boat is important to consumers. In a survey, which targeted consumers who purchased a boat from the merging parties in 2016, respondents were asked about the impact of boat material on their purchase decision. The findings indicate that fiberglass does not appear to be a substitute material for aluminum, especially for buyers of aluminum boats, because only 16% of aluminum boat buyers stated that they might have chosen a fiberglass boat instead. Aluminum boats are about a quarter more expensive than fiberglass boats of the same size class, which also illustrates the differences between these products (FCCA, 2017b).

In the merger between Yamaha and Konekesko, the most relevant categorization for

<sup>27</sup>The main manufacturing materials for boats are aluminum and fiberglass. Additionally, the market includes aluminum-hybrid boats, where the interior is made of fiberglass and the hull of aluminum, as well as boats made from materials such as ABS plastic.

assessing competitive effects is based on the manufacturing material, as it divides the parties' products into overlapping (aluminum boats) and non-overlapping (fiberglass boats) product markets. The combined pre-merger market share of the parties in aluminum motorboats was almost 60% (FCCA, 2017b).

### Additional results and robustness

In our main specification, we estimated the price effect using fixed effects for the boat model. This approach effectively captures the effect for boat models sold both before and after the merger. In contrast, Table 11 presents estimates from a model where, instead of fixed effects, we control for product characteristics. If the product characteristic variables adequately capture the factors influencing price, this approach provides the price effect for both new and old boat models.<sup>28</sup> Using this model, we estimate a small price decrease of 3%, compared to the statistically insignificant effect in our baseline model. However, the difference in point estimates is small in magnitude.

Table 11: Effect on the prices of boats using controls for product characteristics

	Log(price)	
	(1)	(2)
ATT	-0.0329** (0.0150)	-0.0312* (0.0167)
Control	Non-aluminum boats of rivals	Aluminum boats of rivals
N	997	765

The dependent variable is the logarithm of price. Column 1 shows the results for the model using non-aluminum boats of rivals as the control group, while Column 2 presents the results for the model using aluminum boats of rivals as the control group. Both models include year fixed effects and controls for boat and motor characteristics. These characteristics include horsepower, horsepower squared, motor brand, boat brand, boat type, length, width, and boat capacity, as well as dummy variables for smart screens of Buster, Yamarin, AMT, and Silver. Standard errors (in parentheses) are clustered by boat and motor models. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

We estimated the effect on outboard motor prices in Section 6.1. The corresponding event-study estimates are presented in Figure 12. The point estimates prior to the merger are not statistically significant, while the post-merger estimates are statistically significant, ranging from around -4% to -8%.

<sup>28</sup>We are able to explain over 90% of the variation in prices using our set of control variables.

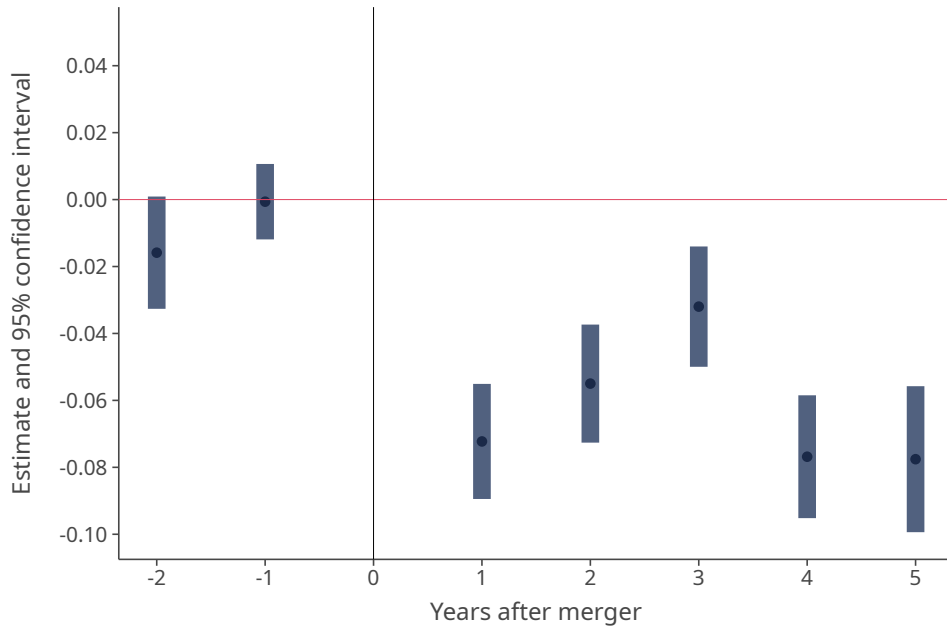


Figure 12: Event-study estimates for outboard motors

Next, Figure 13 illustrates the evolution of the mean yearly ratings from the Kippari boating magazine reviews, separately for the boats of the merging parties and their competitors. There are no significant differences between the mean ratings of the treatment and control groups. In some years, the treatment group received higher average ratings, while in other years, they received lower ones. The ratings for the two groups remain very close to each other even after the merger, indicating that the merger had no significant effect on quality.



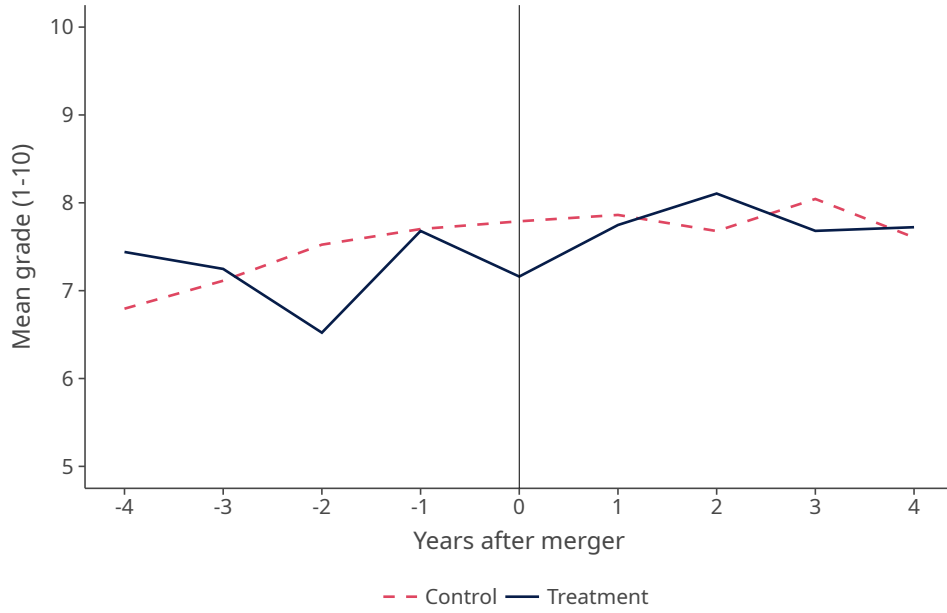


Figure 13: Evolution of grades received by boats in treatment and control groups

*Note:* Mean annual grades are calculated from all motorboat reviews from Kippari magazine from 2013 to 2021. Kippari magazine used a 1–5 star rating scale until 2017, then switched to a 1–10 point scale in 2018. Therefore, the ratings of boats reviewed on the 1–5 star scale were multiplied by two.

Next, Table 12 presents the results for non-overlapping products, specifically the fiberglass boats of the merging parties. The same control groups as in the main specification are used. We find no statistically significant effect on the prices of these boats. The point estimates are negative and are quite close in magnitude to those obtained for the aluminum boats of the merging parties.

Table 12: Results for the non-overlapping products of the merging parties

			Log(price)	
			(1)	(2)
ATT			-0.0120 (0.0141)	-0.0196 (0.0155)
Control	Non-aluminum boats of rivals	Aluminum boats of rivals		
N			923	691

The dependent variable is the logarithm of price. Column 1 shows the results for the model using non-aluminum boats of rivals as the control group, while Column 2 presents the results for the model using aluminum boats of rivals as the control group. Both models include year and boat fixed effects. In addition, we control for horsepower, horsepower squared, motor brand, and the presence of smart screens for Yamarin, AMT, and Silver. Standard errors (in parentheses) are clustered by boat and motor models. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Lastly, Table 13 reports the unweighted price estimates. Once again, the point estimates are not statistically significantly different from zero, and are slightly closer to zero in absolute value compared to our baseline results.

Table 13: Unweighted results for motorboats

			Log(price)	
			(1)	(2)
ATT			-0.0013 (0.0116)	-0.0074 (0.0113)
Control	Non-aluminum boats of rivals	Aluminum boats of rivals		
N			1,489	1,113

The dependent variable is the logarithm of price. Column 1 shows the results for the model using non-aluminum boats of rivals as the control group, while Column 2 presents the results for the model using aluminum boats of rivals as the control group. Both models include year and boat fixed effects. In addition, we control for horsepower, horsepower squared, motor brand, and the presence of smart screens for Buster, Yamarin, AMT, and Silver. Standard errors (in parentheses) are clustered by boat and motor models. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Appendix C. The merger between SOK and Herkku

The merger between SOK and Herkku was conditionally accepted by the FCCA on December 15, 2017. The transaction involved SOK and its regional cooperatives HOK-Elanto, Pirkanmaan Osuuskauppa, and Turun Osuuskauppa, and S-Herkkukeittiö Oy (SOK) acquiring Stockmann's Herkku grocery business (Herkku) in Finland. The condition for approval was that Herkku's procurement through Tuko Logistics Osuuskunta (Tuko) would continue until December 31, 2018, to mitigate potential competitive harm in the procurement market (FCCA, 2017c).

The merging parties operate in the grocery retail market as well as in the procurement market for groceries. SOK serves as the central organization for the cooperatives within the S Group. HOK-Elanto, Pirkanmaan Osuuskauppa, and Turun Osuuskauppa are regional cooperatives engaged in grocery retail through the Prisma and S-market chains, with HOK-Elanto additionally operating the Alepa chain and Turun and Pirkanmaan Osuuskauppa operating the Sale chain. S-Herkkukeittiö was a newly established subsidiary wholly owned by SOK. Stockmann Herkku operated and sold groceries in six Stockmann department stores in Finland.

The merger further consolidated Finland's grocery retail market, strengthening SOK's market position, particularly in Helsinki, Espoo, and Tampere. SOK's market share exceeded 40% in all major markets except Turku. No new entrants had entered the grocery retail market in recent years, and this was deemed unlikely to change in the near future. Entry into the market is primarily constrained by Finland's geographic conditions, including long distances and sparse population.

However, the FCCA's economic analysis concluded that the acquisition would not significantly reduce competition in grocery retail. The analysis considered factors such as local market concentration, the closeness of competition between parties, store profitability, and efficiency gains from the merger, including reduced procurement and logistics costs for Stockmann Herkku stores. The cost savings in procurement and logistics for Herkku stores was especially seen as a factor to mitigate the merger's potential competitive harms. Furthermore, a survey found that SOK's role as a competitor to Herkku was weaker than its market share might suggest, and the competitive pressure Stockmann Herkku exerted on SOK was minimal (FCCA, 2017c).

Tuko was effectively the only alternative, independent wholesale supplier to SOK and Ruokakesko in the grocery procurement market, capable of offering a nationwide assortment of grocery products. The FCCA concluded that the removal of Herkku's procurement volumes from Tuko would weaken Tuko's purchasing terms and economies of scale, causing adjustment difficulties for Tuko. This would also impact the competitive positions of Tuko's other owners, Wihuri and Heinon Tukku. To address concerns regarding procurement market competition, the continuation of Herkku's procurement

from Tuko was required. This commitment was deemed essential to preserve the competitive structure of the procurement market, preventing further strengthening of SOK’s dominance in the grocery retail supply chain (FCCA, 2017c).

### Additional results and robustness

Figure 14 illustrates the evolution of prices for the 51 grocery products in our sample, separately for Herkku, SOK, and the control group. Each group is indexed to 100 in September 2017. A gap between the two vertical lines in the figure indicates the absence of data for the three months preceding the merger. For the graph, we constructed separate price indices for each product and calculated their weighted average, using 2017 product-level sales quantities as weights. The figure shows a significant decrease in Herkku prices following its acquisition.

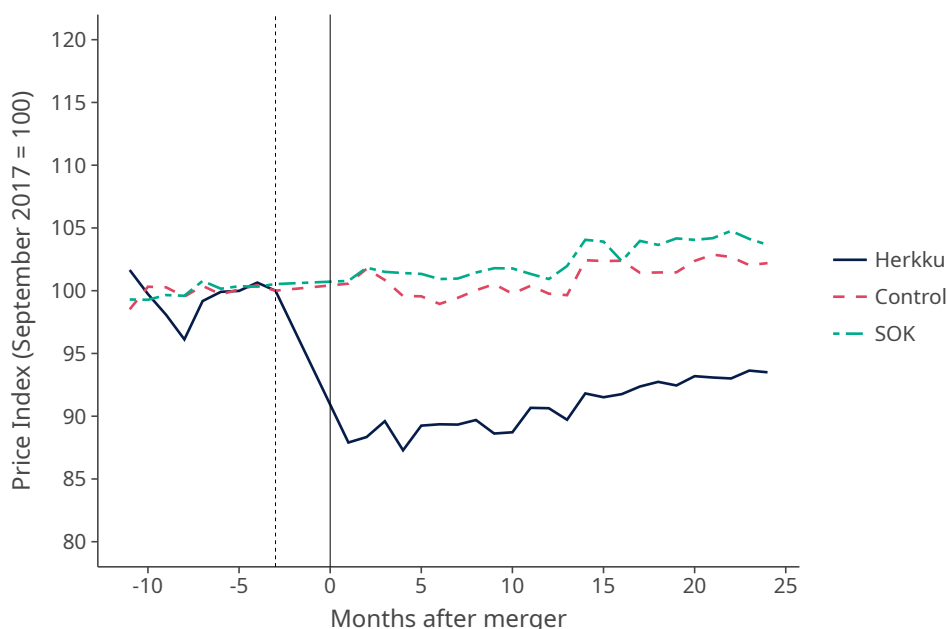


Figure 14: Evolution of the prices of grocery products in the sample

*Note:* Figure shows the price evolution for 51 grocery products, indexed to 100 in September 2017, separately for Herkku, SOK, and the control group.

As noted in the main text, we estimated the effect on costs, including purchase prices and logistics costs for the acquired Herkku, using a before-and-after comparison due to the lack of a comparable control group for costs, unlike for retail prices. For this reason, Table 14 reports Herkku’s retail price results using the same models applied to the cost analysis. The results are of a similar magnitude to those in our baseline model, with a price estimate of 9%, compared to 10% in our main specification.

Table 14: Results from a before-after comparison for retail prices

	Log(price)		Log(residual)
	(1)	(2)	(3)
ATT	-0.0900*** (0.0188)	-0.0916*** (0.0175)	-0.0905*** (0.0188)
Product fixed effects	x	x	x
Month of the year fixed effects	-	x	-
Linear time trend	-	-	x
N	2,237	2,237	1,778

In Columns 1 and 2, the dependent variable is the logarithm of wholesale price. Column 1 shows the effect for the baseline model with product fixed effects. Column 2 adds month of the year fixed effects. In Column 3, we regress residuals from a pre-merger regression of costs on a time trend and product fixed effects against a constant using post-merger data. Standard errors (in parentheses) are clustered by product. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Lastly, Table 15 presents the unweighted price results. As noted in the main text, Herkku receives a significantly smaller weight than SOK in our main specification. When sales-based weights are not used, Herkku receives a larger relative weight, resulting in statistically significant negative estimates.

Table 15: Unweighted results for groceries

	Log(price)	
	(1)	(2)
ATT	-0.0362*** (0.0101)	-0.0401*** (0.0089)
Control	Small stores	Supermarkets and hypermarkets
N	8,942	11,147

The dependent variable is the logarithm of price. In Column 1 the control group consists of rival convenience stores. In Column 2 the control group consists of rival supermarkets and hypermarkets. Standard errors (in parentheses) are clustered by product. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Appendix D. The merger between YIT and Lemminkäinen

The merger of construction company Lemminkäinen Oyj (Lemminkäinen) with YIT Oyj (YIT) was approved by the FCCA in January 2018. It was an absorption merger, in which all assets and liabilities of Lemminkäinen transferred to YIT without a liquidation process. As a result, Lemminkäinen dissolved and ceased to exist as a separate legal entity. YIT is a construction company that develops, builds, and renovates residential buildings, commercial spaces, infrastructure, and entire areas, while Lemminkäinen was a construction company engaged in building construction, infrastructure construction, and the sale of aggregates. At the time of the transaction, both companies operated in Finland, Russia, and the Baltics. Additionally, YIT operated in the Czech Republic, Slovakia, and Poland, and Lemminkäinen in Sweden, Norway, and Denmark (FCCA, 2018a).

The merger of YIT and Lemminkäinen was a horizontal merger, combining two players in the construction market. The FCCA examined the competitive effects of the merger separately in areas such as new infrastructure construction, certain specialized infrastructure work, road maintenance, non-residential building construction, and residential construction (FCCA, 2018a).

The Finnish Transport and Communications Agency, together with the regional ELY Centres, annually tenders a portion of area contracts for the daily maintenance of roads. The Finnish road network is divided into 79 contract areas, and the duration of maintenance area contracts is typically five years. Each year, 10-20 area contracts are generally put out to tender, with each contract covering approximately 500–2,000 kilometers of roads. In these tenders, there is only one round of bidding, and bids are submitted without knowing which other companies are participating or the bid amounts of competitors. The winner is not determined solely by the lowest bid; instead, a model is used that awards the contract based on a combined score for price, commitments, tests, and exams.

Road maintenance was gradually opened to competition starting in 1998 when the Finnish Road Administration tendered five pilot contracts. Before this, road maintenance was managed by the Finnish Road Administration (later the Finnish Transport Infrastructure Agency and now the private firm Destia). All road maintenance contracts were tendered by 2005. The road maintenance market remains highly concentrated, primarily due to Destia's historical position. Destia's market share is still substantial at approximately 44%, though it has steadily declined since the market opened to competition. Following YIT's acquisition of its competitor Lemminkäinen, YIT's market share rose to around 35%. Since 2022, YIT's market share has decreased, while the market share of Terranor, the third-largest player, has correspondingly increased.

Figure 15 illustrates entry and the evolution of the number of players in the road maintenance market. It displays the total number of bidders, the number of new bidders,

the number of companies winning bids each year, and the new entrants that succeeded in securing their first contract. Notably, no new bidders participated in tenders in 2019. In 2020, four new bidders entered the market, with two securing contracts, marking the first new winners since Lemminkäinen’s entry in 2014. Among them, Pimara Oy won around 9% of contracts starting in 2023, achieving a market share of approximately six percent that same year.

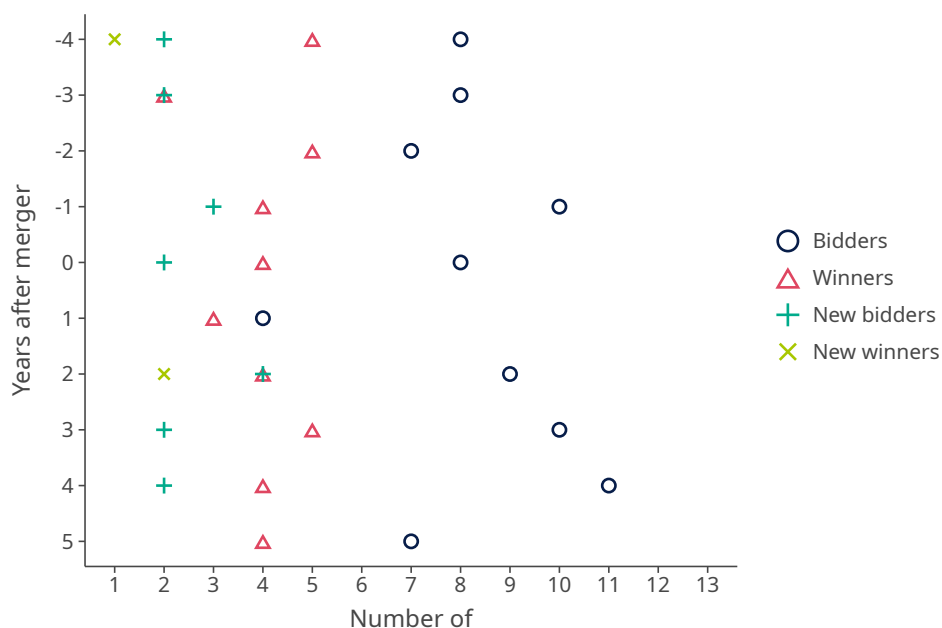


Figure 15: Entry and the evolution of the number of players in the road maintenance market

*Note:* Figure shows the total number of bidders, new bidders, companies winning bids each year, and new entrants securing their first contract in the road maintenance bidding market.

Figure 16 illustrates the evolution of market concentration, with the left panel showing all regions and the right panel focusing on ELY regions where Lemminkäinen participated in over 50% of the tenders. Both panels include the HHI, calculated for currently active contracts and those tendered in the respective year. The figures reveal an increase in HHI, which is more pronounced in the active areas where Lemminkäinen had significant participation.

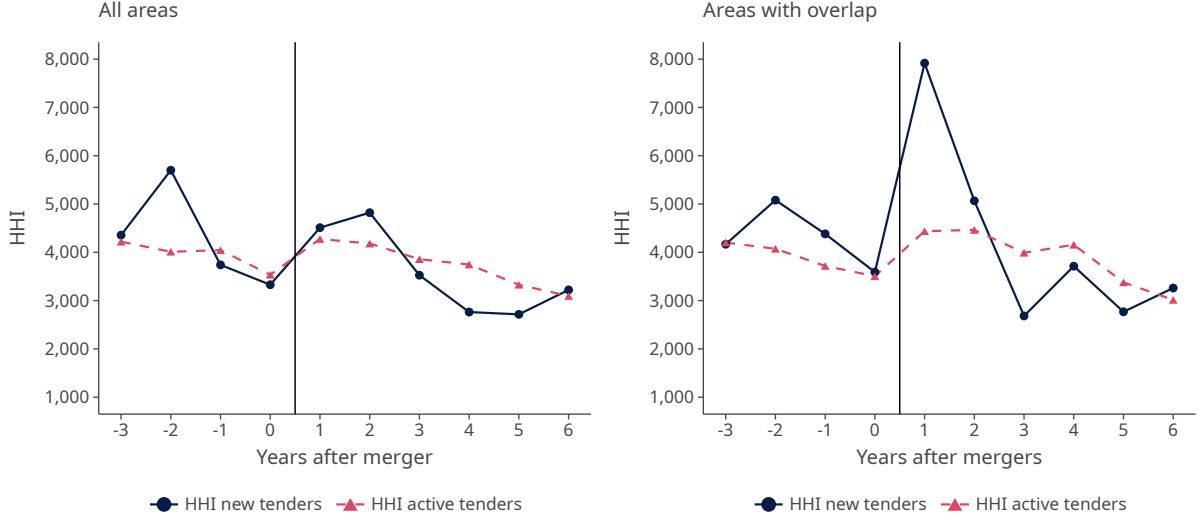


Figure 16: Evolution of road maintenance market concentration (HHI): All areas vs. high-overlap areas

*Note:* Figure shows the evolution of market concentration, with the left panel showing all regions and the right panel focusing on ELY regions where Lemminkäinen participated in over 50% of tenders. Both panels display the HHI, calculated for currently active contracts and contracts tendered in the respective year.

### Additional results and robustness

Because we do not have as clearly defined a control group as for the other mergers, we test the robustness of our results using a method similar to that of Bhattacharya et al., 2023. To implement this approach, we use data from the four years prior to the merger and estimate the following regression:

$$Y_{idjt} = t + \lambda_j + Controls_{idt} + \epsilon_{idjt},$$

where  $i$  denotes a tender,  $j$  a firm,  $d$  an ELY region, and  $t$  a year. In this specification,  $t$  represents a linear time trend,  $\lambda_j$  is a firm fixed effect, and  $Controls_{idt}$  includes our cost control variables: the total number of road kilometers, the number of pedestrian and bicycle lane kilometers, the number of gravel road kilometers, the duration and difficulty of the tender, and the cost index of road maintenance. For the dependent variable, we use either the price per kilometer or the logarithm of the price per kilometer.

We then use data for the five years after the merger completion and regress:

$$\begin{aligned} Y_{idjt} - \widehat{Y}_{idjt} = & \beta_1 \mathbb{1}_{\{Merging\ Party\}}_j + \beta_2 \mathbb{1}_{\{Non-Merging\ Party\}}_j \\ & + \beta_3 \mathbb{1}_{\{Merging\ Party\}}_j \mathbb{1}_{\{Treated\}}_d \\ & + \beta_4 \mathbb{1}_{\{Non-Merging\ Party\}}_j \mathbb{1}_{\{Treated\}}_d + \epsilon_{idjt}, \end{aligned}$$



where  $\widehat{Y}_{idjt}$  is the predicted value of the outcome of interest obtained from the first regression. The "Treated" dummy corresponds to those ELY regions where Lemminkäinen participated in over 50% of the tenders before the merger. The objects of interest are  $\beta_3$  and  $\beta_4$ , which capture the merging and non-merging party differences between treated and untreated markets in the difference between realized outcomes and those predicted by the coefficients in the first-stage regression. The identification assumption underlying this specification is that any uncaptured changes in the post-merger environment will impact both treated and untreated markets. Therefore, these changes can be accounted for by isolating the differential effects in treated markets compared to those in untreated markets.

Table 16 presents the coefficient estimates for  $\beta_3$  and  $\beta_4$ , using both the logarithm and levels of residuals. The results are slightly larger but remain comparable in magnitude to those from the traditional difference-in-differences specification. According to the estimates, the merging parties reduced their bids by approximately 14%, while rivals lowered theirs by around 8% in the treated areas. The effect for the merging parties can be compared to the baseline model estimate of 9%. When we run a similar difference-in-differences regression for the bids of competitors, we obtain a point estimate of 8%.

Table 16: Road maintenance results from the before-after comparison

	Log(residuals) (1)	Residuals (2)
ATT: Merging parties	-0.1462*** (0.0321)	-2,014.3914*** (409.9498)
ATT: Rivals	-0.0848* (0.0326)	-1,159.3071* (446.9726)
N	243	243

In Column 1, the dependent variable is in logs, while in Column 2, it is in levels. Residuals are obtained from a regression of price per km (or the log of price per km) on the total number of road kilometers, the number of pedestrian and bicycle lane kilometers, the number of gravel road kilometers, the duration and difficulty of the tender, the cost index of road maintenance, a linear time trend, and firm fixed effects. The treated group consists of bids in areas where Lemminkäinen participated in over 50% of tenders before the merger. The control group consists of bids in areas where Lemminkäinen participated in less than 50% of tenders. Standard errors (in parentheses) are clustered by tender. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Because there are no geographical areas where Lemminkäinen did not participate in any tenders before the merger, we defined treated areas based on Lemminkäinen’s participation rate. In our baseline model, we classified ELY regions as treated if Lemminkäinen participated in over 50% of the tenders, resulting in 5 out of 11 regions being treated. To test the sensitivity of our results, we also used 40% and 60% cut-offs, which led to 7 out of 11 and 3 out of 11 treated regions, respectively.

Table 17 presents the point estimates obtained using these alternative definitions of the treatment group. The results are practically identical when using the higher threshold. However, with the lower threshold, the estimates are slightly smaller in absolute value.

Table 17: Sensitivity of results to the definition of treated areas

		Log(price/km)			
		(1)	(2)	(3)	(4)
ATT		-0.0929** (0.0337)	-0.0405 (0.0319)	-0.0675* (0.0294)	-0.0162 (0.0270)
Active Area	Participation over 60%		Participation over 60%	Participation over 40%	Participation over 40%
Control Group	Rival bids in non-active areas		Rival bids in active areas	Rival bids in non-active areas	Rival bids in active areas
Observations		234	221	306	293

The dependent variable is the logarithm of price per kilometer. In columns 1 and 2, the treatment group consists of bids from the merging parties in areas where Lemminkäinen participated in over 60% of tenders before the merger. In columns 3 and 4, the treatment group consists of bids from the merging parties in areas where Lemminkäinen participated in over 40% of tenders before the merger. In columns 1 and 3, the control group consists of bids from rivals in areas where Lemminkäinen did not participate in over 50% of tenders. In columns 2 and 4, the control group consists of rival bids in areas where Lemminkäinen participated in over 50% of tenders. All models include firm and year fixed effects, as well as controls for the total number of road kilometers, the number of pedestrian and bicycle lane kilometers, the number of gravel road kilometers, the duration, and the difficulty of the tender. Standard errors (in parentheses) are clustered by tender. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In the main specification, we used the total number of road kilometers in the tendered contracts as weights. Table 18 reports the unweighted results. The weighting has little impact in this case, as the estimates are very similar to those in our main specification.

Table 18: Unweighted results for road maintenance

	Log(price/km)	
	(1)	(2)
ATT	-0.0947** (0.0341)	-0.0431 (0.0236)
Control	Rival bids in not active areas	Rival bids in active areas
N	263	250

The dependent variable is the logarithm of price per kilometer. The treatment group consists of bids from the merging parties in areas where Lemminkäinen participated in over 50% of tenders before the merger. In Column 1 the control group consists of bids from rivals in areas where Lemminkäinen did not participate in over 50% of tenders, while in Column 2 the control group consists of rival bids in areas where Lemminkäinen participated in over 50% of tenders. All models include firm and year fixed effects, as well as controls for the total number of road kilometers, the number of pedestrian and bicycle lane kilometers, the number of gravel road kilometers, the duration, and the difficulty of the tender. Standard errors (in parentheses) are clustered by tender. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Appendix E. The merger between Oral and Med Group

The merger between Colosseum Dental Group AS and Med Group Hammaslääkärit Oy (Med Group) was completed in July 2018. Through the merger, Colosseum Dental Group AS acquired the entire share capital of Med Group Hammaslääkärit Oy. Colosseum Dental Group AS is an international company specializing in oral health and dental services and owns Oral Hammaslääkärit Oyj (Oral) in Finland. At the time of the merger, Oral operated 59 dental clinics across Finland, offering general and specialized dental care, denturist services, dental laboratory services, and dental products. Med Group Hammaslääkärit Oy was part of a domestic social and healthcare services group, with Med Group Holding Oy as its parent company. Med Group provided private oral health services under the ONNI hammas brand and operated 22 dental clinics in 15 municipalities across Finland, with about half located in the Helsinki metropolitan area. Med Group offered various general and specialized dental care services and had its own dental laboratory (FCCA, 2018b).

The FCCA approved the merger with conditions. As a condition of the merger, Oral was required to divest one clinic each in Hyvinkää, Imatra, Pieksämäki, and Porvoo. The market share of the combined entity would have exceeded 50% in these municipalities.

Oral sold the Porvoo ONNI hammas clinic to Terveystalo and the other three clinics to Hammas Velho. After the divestitures, the merging parties had overlap in Espoo, Helsinki, Jyväskylä, Kouvola, Kuopio, Lappeenranta, Salo, Turku, and Vantaa municipalities (FCCA, 2018b).

In Finland, municipalities are responsible for public oral healthcare. Private oral healthcare largely offers similar dental treatments as public oral healthcare, although the private sector's range of services is somewhat broader, including prosthetic and cosmetic procedures. A key distinction between the national and public dental care markets is that the public sector has long waiting times. Based on a critical loss analysis (see, e.g., Katz and Shapiro (2003)), FCCA concluded that private dental care constituted its own relevant product market.

The national health insurance system complements public healthcare by covering part of the costs incurred by patients using private healthcare services (known as Kela reimbursement). Reimbursement for private dental care is provided for examinations, preventive treatments, and treatment of oral or dental diseases by a dentist. Hygienist services are reimbursed if prescribed by a dentist. Prosthetic or cosmetic procedures are not covered, except in certain specific cases. In municipalities where both merger parties operated, the share of private services was typically slightly below half of all visits in major cities and about one-third in smaller towns in 2017 (FCCA, 2018b).

One key characteristic of the market is that customers are highly loyal to their chosen dentist or dental clinic and rarely switch providers. According to a survey, Oral and Med Group customers had been seeing the same dentist for an average of 10–15 years. The survey also found that the primary criterion for choosing a private dental clinic was familiarity (FCCA, 2018b).

### **Additional results and robustness**

Figure 17 illustrates the evolution of prices in the private dental market for Oral, the acquired Med Group, and the control group. To construct the figure, a separate index was created for each dental procedure, calculated by dividing the price by the mean price in the month prior to the merger. These indices were then averaged using a weighted mean, with weights based on the number of visits in the year preceding the merger. The figure reveals a relatively small price increase for Med Group a few months after its acquisition. The two observed price drops for Oral are explained by promotional pricing for basic dental examinations.



Figure 17: Evolution of prices in the private dental market

*Note:* Figure shows the price evolution for Oral, Med Group, and the control group. Prices are indexed to the month prior to the merger, with weights based on the number of visits for each procedure in the year before the merger.

Table 19 presents the results for treatment variety in dental services. The dependent variable is the number of unique dental procedures offered at a clinic in a given month. Rare procedures with fewer than 1,000 total visits in the year prior to the merger have been excluded from the analysis. The point estimate is negative but not statistically significant.

Table 19: Results for treatment variety in dental services

Log(# of different dental procedures)	
(1)	
ATT	-0.0693 (0.0457)
N	8,882

The dependent variable is the logarithm of the number of unique dental procedures. we have excluded procedures that had fewer than 1,000 total visits in the year prior the merger. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 20 presents the regression results for municipalities with divestments. The

treatment group consists of clinics in the four municipalities where divestments occurred, while the control group includes clinics in municipalities where neither or only one of the merging parties was active. The results indicate no statistically significant change in prices in the four municipalities following the merger.

Table 20: Results for municipalities with divestments

Log(price)		
	(1)	(2)
ATT	0.0015 (0.0122)	-0.0108 (0.0145)
Control	Rival clinics in non-overlap markets	Rival clinics in overlap markets
N	137,438	89,577

The dependent variable is the logarithm of price. In Column 1, the control group consists of rival clinics located in non-overlapping geographical markets. In Column 2, the control group consists of clinics in overlapping markets. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

As with the other mergers, we present the unweighted price effect estimates in Table 21. These estimates are smaller in magnitude compared to our main specification and are statistically insignificant. It appears that the prices of more common dental procedures increased, while the prices of less common procedures either did not increase or decreased.

Table 21: Unweighted results for dentist services

Log(price)		
	(1)	(2)
ATT	0.0020 (0.0083)	-0.0054 (0.0094)
Control	Rival clinics in non-overlap markets	Rival clinics in overlap markets
N	169,791	116,101

The dependent variable is the logarithm of price. In Column 1 the control group consists of rival clinics located in non-overlapping geographical markets. In Column 2 the control group consists of clinics in overlapping markets. Standard errors (in parentheses) are clustered by clinic. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Appendix F. The merger between Scandic and Restel

In the accommodation market, Scandic acquired Restel in December 2017. The merging parties were the two largest hotel chains in Finland, operating hotels in 12 overlapping municipalities with combined market shares ranging from 20-30% to 50-60%. The FCCA approved the merger with conditions, requiring the parties to divest one hotel in Pori, Lahti, and Kuopio to competitors. Additionally, Scandic committed not to acquire two planned new hotels in Lappeenranta and two in Vantaa (FCCA, 2017d).

At the time of the merger, Scandic had 24 hotels in 17 locations in Finland and also operated three Hilton hotels in Finland under franchise agreements. Restel, on the other hand, owned 43 hotels, including the Cumulus City & Resort chain, as well as Holiday Inn hotels and other properties in Helsinki, such as Crowne Plaza, Hotel Indigo Helsinki Boulevard, and Hotelli Seurahuone. Following the acquisition, Scandic would become the largest hotel chain in Finland by revenue, with an approximately 30% nationwide market share. Its most significant competitor, the S Group, operated 53 hotels with a national market share of 20–25% (FCCA, 2017d).

According to the FCCA's investigations, the acquisition would have adverse effects on competition in the hotel markets of Pori, Lahti, Kuopio, Lappeenranta, and Vantaa. These markets were already concentrated and would have become even more so after the acquisition. The FCCA required Scandic to sell one hotel in Pori, Lahti, and Kuopio to its competitors. The authority concluded that this would mitigate the reduction in competition caused by the acquisition (FCCA, 2017d). Scandic also committed not to reacquire the hotels it sold.

The FCCA's investigations found that new hotels were expected to open in Lappeenranta and Vantaa within the next 2–3 years. To address potential competition concerns, the authority required Scandic to commit not to acquire the rights to operate these new hotels. The FCCA assessed that the entry of these new hotels would reduce Scandic's market power and alleviate competition concerns (FCCA, 2017d).

In the Scandic/Restel merger, we were unable to construct a dataset that allowed us to track the prices charged by individual hotels and hotel operators. However, we are able to monitor average prices on a monthly and municipal level using accommodation statistics provided by Statistics Finland.

Figure 18 shows the price development calculated from this dataset separately for the municipalities where the parties had overlapping activities but were not required to divest hotels, the municipalities where only one of the merging parties was active, and in the municipalities where the parties were required to divest a hotel. The left panel of the figure depicts the evolution of average room prices, while the right panel shows the indexed price development, with prices indexed to the year before the merger. Based on the figure, there do not appear to be significant differences in price development between

the three groups. If anything, prices in overlapping municipalities seem to have increased less than in non-overlapping municipalities.

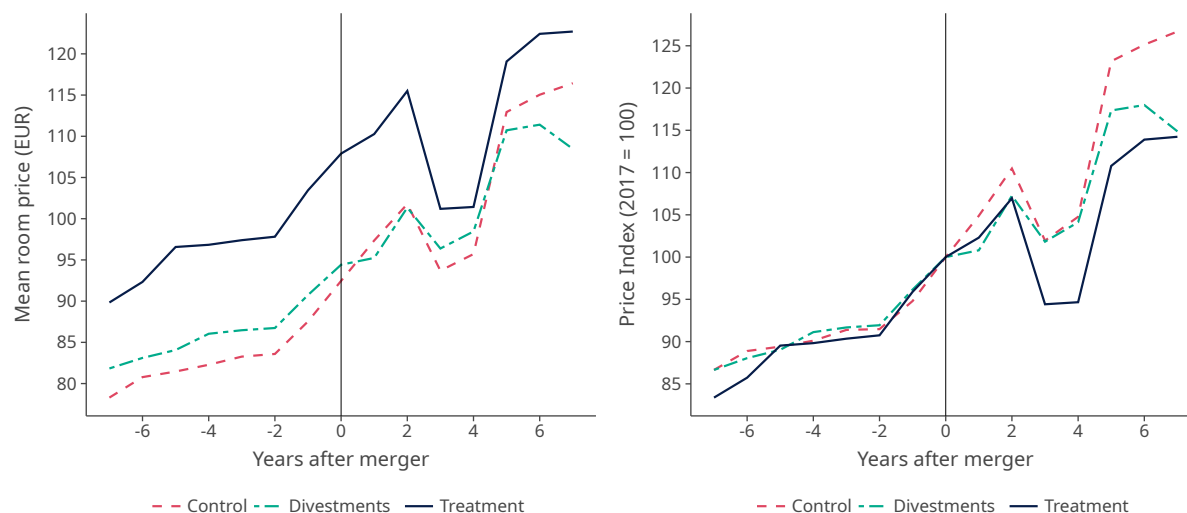


Figure 18: Evolution of prices in the hotel market

*Note:* Figure shows the price development, separately for municipalities where the parties had overlapping activities but no divestitures, municipalities where only one or neither of the merging parties was active, and municipalities where divestitures were required. The left panel depicts the evolution of average room prices, while the right panel shows indexed price development, with prices indexed to the year before the merger.

The accommodation statistics also track the number of hotel rooms by municipality. Using this data, we have been able to monitor entry and expansion following the merger. Figure 19 displays the average number of hotel rooms separately for the same three groups as before. When we include all municipalities in the figure (left), we observe that treatment municipalities are, on average, significantly larger in terms of the number of rooms. In the overlap markets, we also note that new capacity has been added after the merger. On average, the capacity in the overlap municipalities increased by approximately 5% two years after the merger and over 15% five years after the merger. In the right panel of the figure, we check whether the observed increase in the number of rooms is solely driven by growth in the Helsinki region by excluding it from the analysis. Even after excluding Helsinki, we still observe growth in room numbers—around 3% two years after the merger and approximately 10% five years after the merger.



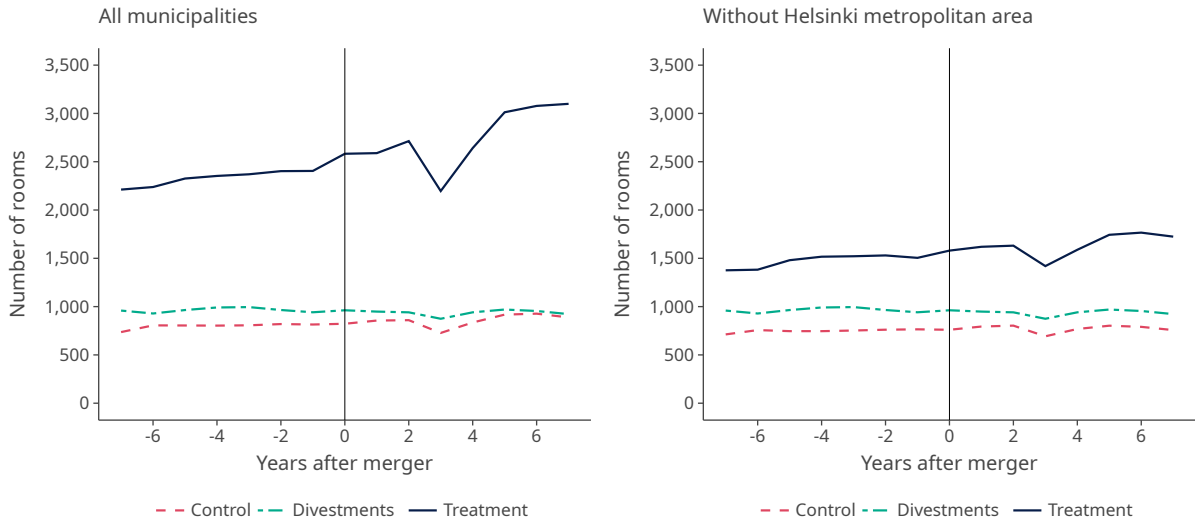


Figure 19: Evolution of the number of rooms in the hotel market

*Note:* Figure displays the average number of hotel rooms separately for three groups: municipalities with overlapping activities but no divestitures, municipalities where only one or neither of the merging parties was active, and municipalities where divestitures were required. The left panel includes all municipalities, while the right panel excludes Helsinki to examine the development outside the capital region.

Table 22 presents the estimates from a difference-in-differences specification, where the treatment group consists of municipalities where the merging parties had overlapping activities, and the control group includes municipalities where the merger had no impact on competition. The dependent variables are the logarithm of the average room price and the logarithm of the average price of an overnight stay. We report both unweighted and weighted results, using the number of stays in the municipality during the pre-merger year as weights. The point estimates are negative but not statistically significant at the 5% level.

COVID-19 significantly impacted the accommodation industry, as evidenced by the sharp drop in prices during 2020 and 2021 shown in Figure 18. It is possible that the treatment and control municipalities responded differently to COVID-19 due to underlying differences between them. For instance, Figure 19 illustrated that treatment municipalities have, on average, a much higher number of hotel rooms. To account for this, Panel B of Table 22 presents results with the sample restricted to end in 2019. Consistent with the full sample, the point estimates are negative, albeit slightly smaller in absolute value, and remain statistically insignificant.

Table 22: Price estimates for the hotel market in overlap areas

**Panel A:** Results with full sample

	Log(price of a room)		Log(price of an overnight stay)	
	(1)	(2)	(3)	(4)
ATT	-0.0570 (0.0539)	-0.0344 (0.0488)	-0.0999* (0.0567)	-0.0760 (0.0447)
Weights	x	-	x	-
N	3,026	3,026	3,026	3,026

**Panel B:** Results without the COVID period

	(1)	(2)	(3)	(4)
	ATT	-0.0113 (0.0300)	-0.0148 (0.0410)	-0.0368 (0.0260)
Weights	x	-	x	-
N	2,040	2,040	2,040	2,040

In Columns 1 and 2, the dependent variable is the logarithm of the average room price, while in Columns 3 and 4, it is the logarithm of the average price for an overnight stay. Columns 1 and 3 use the number of hotel stays in the municipality in the year before the merger as weights. Standard errors (in parentheses) are clustered by municipality. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Finally, Table 23 presents comparable estimates for municipalities where parties were required to divest hotels. The control group is defined as before, and we report results both including and excluding the COVID period. The dependent variables are the logarithm of the average room price and the logarithm of the average price of an overnight stay. Results are provided both unweighted and weighted, with weights based on the number of stays in the municipality during the pre-merger year. None of the point estimates are statistically significant.

Table 23: Price estimates for the hotel market in markets with required divestments

<b>Panel A: Results with full sample</b>				
	Log(price of a room)		Log(price of an overnight stay)	
	(1)	(2)	(3)	(4)
ATT	-0.0280 (0.0469)	-0.0405 (0.0387)	-0.0506 (0.0544)	-0.0725 (0.0425)
Weights	x	-	x	-
N	1,958	1,958	1,958	1,958
<b>Panel B: Results without the COVID period</b>				
	(1)	(2)	(3)	(4)
ATT	-0.0279 (0.0315)	-0.0338 (0.0372)	-0.0375 (0.0291)	-0.0479 (0.0306)
Weights	x	-	x	-
N	1,320	1,320	1,320	1,320

In Columns 1 and 2, the dependent variable is the logarithm of the average room price, while in Columns 3 and 4, it is the logarithm of the average price for an overnight stay. Columns 1 and 3 use the number of hotel stays in the municipality in the year before the merger as weights. Standard errors (in parentheses) are clustered by municipality. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .