Competition in Print Advertising between Paid and Free Newspapers

WORKING PAPER

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Abstract

This paper looks at competition in the print newspaper advertising market in New Zealand. We construct an original dataset of advertising rates to explore the competitive forces within and between the two tiers: paid daily city newspapers and free weekly suburban newspapers. This has particular relevance in light of the Commerce Commission's recent rejection of the proposed NZME-Fairfax merger, and Fairfax's subsequent closure of 15 newspaper titles. In our analysis, we find strong evidence for competition between free weekly titles with overlapping areas of distribution. Specifically, the presence of a rival free weekly in one's geographic market is associated with a 11% decrease in the display advertising rate. We find weaker evidence for competition between the two tiers. We therefore show that the umbrella model of newspaper competition is not always predominant, despite the presence of multiple newspaper tiers.

JEL classification: D12; L11; L13; L41

Keywords: newspaper; print advertising; ownership structure; competition; merger

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1 Introduction

The study of competition between newspapers has typically focused on their content, the sale price to the public, and advertising rates, all within a monopolistically competitive industry structure.[1] A question that is not addressed directly in this literature is how newspapers of different sizes are able to co-exist with overlapping areas of distribution. Monopolistic competition may explain how a broadsheet (quality) newspaper and tabloid newspaper can co-exist, but in an industry characterised by very high first copy (fixed) costs and low marginal costs of production, it offers no explanation of how a large metropolitan newspaper can co-exist along-side suburban free weekly newspapers. In this paper we use the variation in the ownership of paid daily and free weekly newspapers to explore competition in the newspaper industry in New Zealand.

The newspaper industry in New Zealand may be briefly described as follows (a fuller description follows in section 3). Each of the main metropolitan centres has a paid daily newspaper and a number of free weekly newspapers. All but one of the paid dailies is owned by either Fairfax Media or NZME, which also own the majority of the free weekly titles. The remaining free weekly titles are owned either by regional media companies or local independent groups. The variation in ownership is such that there are centres where the paid daily and free weeklies are owned by the same publisher, centres where the paid daily and free weeklies are owned by competing publishers, and markets where different free weeklies are owned by competing publishers.

The nature of newspaper competition in New Zealand is of more than academic interest.[2] The Commerce Commission recently declines a merger application from Fairfax and NZME. A large part of the final determination is devoted to the potential lessening of competition between free weekly newspapers, but does not consider any interaction between the free weekly market and the market for paid daily newspapers.

Our main results are as follows. There is weak evidence of competition between paid daily and free weekly newspapers. There is stronger evidence of competition between publishers of free weekly newspapers operating in overlapping areas of distribution. The presence of a

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[1] The seminal articles in the economics of newspapers are Corden (1952), Reddaway (1963), and Rosse (1967).

[2] http://www.comcom.govt.nz/business-competition/mergers-and-acquisitions/authorisations/ merger-authorisation-register/nzme-limited-and-fairfax-new-zealand-limited/

competitor in a free weekly market lowers advertising rates and advertising rates per reader. The results are both statistically and economically significant. These results support the Commerce Commissions determination that a merger between NZME and Fairfax media would result in a lessening of competition in the market for free weekly newspapers.

Our paper adds to the large literature on the economics of newspapers, and the smaller literature on ownership concentration in the newspaper industry. Fan (2013) offers an up-to-date list of papers on the economics of newspapers. The literature on ownership concentration includes Chaudhri (1998), Chandra and Collard-Wexler (2009), and Fan (2013). An early paper by Ferguson (1983) considers ownership across media platforms, the cross ownership of newspaper-radio and newspaper-television assets within a single market. The paper closest to ours is Chandra and Collard-Wexler (2009), which investigates the impact of mergers on newspaper cover prices and advertising rates in Canada. Our paper differs from theirs in considering markets where newspapers with overlapping areas of distribution are of a different type, rather than, for example, competing daily titles. Finally, Lacy, Coulson, and Cho (2002) examine competition between different types of newspapers, including paid dailies and free weeklies, but without considering the ownership of the newspapers, an element that is central to our study.

The rest of the paper is organized as follows. Section 2 lists key papers in the literature on which we build our work. Section 3 gives a background on the print newspaper industry in New Zealand and Australia, highlighting its difference from that in North America. Section 4 documents the construction of our original dataset. Section 5 presents our empirical analysis on newspaper advertising rates, circulation, and market structure variables. Section 6 concludes.

2 Literature Review

While the media is the subject of much economic research, papers dedicated to print newspers are relatively scarce. Here we categorize the most noteworthy ones. As a canonical example of a two-sided market, it provides empirical evidence to the growing body of theoretical literature. For example, Chandra and Collard-Wexler (2009) presents a theoretical model in which mergers in a two-sided market do not necessarily lead to higher prices on either side, and find empirical evidence of this in the Canadian newspaper market. Theoretical work by Chaudhri (1998) comes to a similar conclusion, and relates to the emergence of monopolies in the Australian newspaper market. Argentesi and Filistrucchi (2007) estimates market power in the Italian

newspaper industry using a structural model. They find that while the advertising market is close to competitive, the cover price shows some evidence of joint profit maximization. Given the industry's ongoing trends of declining number of titles and increasing ownership concentration, many studies explore their effects on non-price characteristics and the broader civil society. Most recently, Fan (2013) simulates a newspaper merger in the Minneapolis market that was blocked by the Department of Justice. She finds that both newspaper would have decreased content quality, local news ratio, and content variety, and increased subscription prices. Thus, disregard for characteristics adjustments would lead to an underestimation of the loss of surplus for readers. In contrast, George (2007) shows that differentiation and variety increase with ownership concentration, using data on reporter assignments to topical areas. Schulhofer-Wohl and Garrido (2013) is a case study on the closure of *The Cincinnati Post* in 2007. Using a difference-in-differences strategy, they find that fewer candidates run for municipal office, incumbents are more likely to win re-election, and voter turnout and campaign spending fall. Gentzkow, Shapiro, and Sinkinson (2011) exploits the entries and exits of U.S. daily newspapers over a long period. They find that while newspapers have a robust positive effect on political participation, it is mainly driven by the presence of the first title in a market, not by the competition from subsequent titles.

The paper from the economics literature most closely aligned with our work is Ferguson (1983). This earlier study investigates how daily newspaper advertising rates vary with media competition and media ownership; our study asks similar questions on the advertising rates of free weekly newspapers. The author avoids the problem of endogeneity seen in earlier studies by modeling circulation and advertising rate in two separate equations. His explanatory variables include various measures of newspaper chain ownership and broadcasting cross-ownership. He finds that cross-ownership with television station is associated significantly lower milinch advertising rates (rates per column inch per thousand circulation), while cross-ownership with radio station is not significant. Furthermore, the milinch advertising rate is negatively related to the number of broadcast stations, and positively related to chain newspaper ownership. Lastly, a competing Sunday edition is associated with significantly higher Sunday milinch advertising rates.

A small number of papers investigate the local newspaper market in New Zealand. Most notably, Gibbons (2014) studies the vigorous competition in the Queenstown newspaper market and suggests that less concentrated ownership could increase competition and benefit readers in

other parts of New Zealand. Molineaux (1995) provides an excellent documentation of the high concentration of ownership in the history of the industry.

The umbrella model of newspaper competition is the first model to portray the unique multi-layer structure of the newspaper industry, a feature not found in other media markets such as radio or television. It is first proposed by Rosse (1975) and Rosse (1978). The original model, based on newspaper markets in the San Francisco Bay Area and New York, identifies four tiers that compete with each other. From the top (first) tier to the bottom (fourth), they are metropolitan dailies; satellite city dailies; suburban dailies; and weeklies and "shoppers". As an analogy, the shaft of the umbrella represents the title's core geographic market, while the canopy covers its broader circulation area. Titles in different tiers usually do not share the same core market (i.e. no two umbrella shafts exist in the same location); rather, titles in a lower tier exist under the canopy (or "shadow") of a title in the upper tier.[3] Competition for both readers and advertisers exists between titles from different tiers, wherever their canopies overlap. The model brings emphasis to competition between different newspaper tiers at a time when the number of communities with multiple competing newspaper titles (on the same tier) has declined.

While there exists a sizable literature on competition in newspapers, and other forms of media in general, research on (paid or free) weekly suburban newspapers is particularly scarce. A possible reason may be that, in North America, they are generally eclipsed by the well-established newspapers in the upper tiers—the metropolitan dailies, satellite city dailies, and suburban dailies. However, these free weekly suburban newspapers play a bigger role in the print news media in New Zealand because there is only one upper tier of city daily newspapers above them. Moreover, these city dailies do not cover the entire country, and many smaller towns have access to free suburban weekly newspapers only. Much of the latest existing research on weekly newspapers (free or otherwise) is done by Stephen Lacy and his co-authors. Lacy, Coulson, and Cho (2001) looks at competition among free weekly newspapers in a sample of counties in the U.S. They find that, in general, the advertising rate (open line rate for cost per thousand) decreases with competition from other weeklies in the same county. However, in the subset of counties with intense competition, this relationship disappears. Competition is quantified with

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[3]For example, in the San Francisco Bay Area, two titles in the top tier are the morning and afternoon newspapers published in San Francisco. Two titles in the second tier are based in Oakland and San Jose. The third tier consists of more than ten titles, in suburban areas such as Palo Alto and Berkeley.

an index, as the absolute difference between the weekly newspaper's market penetration and other rival weeklies' penetration. Lacy, Coulson, and Cho (2002) uses U.S. counties outside of central metropolitan areas to establish that competition among newspapers in the three tiers (metropolitan dailies; non-metropolitan dailies; weeklies) exists. The authors use market penetration in the county level of these three tiers, and regress each penetration measure on the other two. The correlations are all negative, with the strongest and most consistent impact between the bottom two tiers. The correlation between the top two tiers softens when only free (as opposed to paid) weeklies are included. The authors interprets this pattern as evidence for metro dailies and free weeklies being complements, and together they are a substitute for non-metro dailies. These reduced-form studies in the journalism literature suffer from the usual issue of endogeneity, in treating circulation (or market penetration) as an exogenous explanatory variable. A structural model on market penetration would potentially include both the readers' and advertisers' decision problems, with interaction between these the two sides of the market.

3 Industry background in NZ and Australia

NZME owns the largest paid daily metropolitan newspaper in New Zealand, the *NZ Herald*, based in Auckland, and five other paid daily newspapers in regional centers around the North Island. In addition, it owns 22 free suburban newspapers, all based in the North Island. Roughly half are delivered to suburban areas where one of NZME's own paid daily newspapers operates; others are served by one of Fairfax's paid daily newspapers.

Fairfax owns four paid daily newspapers in the North Island and five in the South Island. They cover the three largest population centers after Auckland: Wellington, Christchurch, and Hamilton. Fairfax also owns 52 free weekly newspapers.[4] Its titles in the South Island are mostly delivered to suburban areas around its own paid daily newspapers, except those around Dunedin (explained below). Fairfax's other free weekly newspapers, in the North Island, mostly cluster around regional centers served by one of either Fairfax's own or NZME's paid daily newspapers.

Besides these two corporate owners, there are a few independent newspaper publishers in New Zealand. Allied Press publishes the paid daily newspaper in Dunedin, and fourteen free weekly newspapers, delivered to communities on the west coast and lower half of the South Island. Star Media publishes seven suburban free weekly newspapers, all of which are delivered

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[4]We exclude titles that are published less than once a week.

to Christchurch suburbs. Wellington Suburban Newspapers Ltd. publishes three free weekly titles. Sun Media publishes two free weekly titles in Tauranga. Beacon Media Group publishes a free weekly in each of Whankatane and Opotiki. Finally, smaller independent publishers produce single titles in their local communities.

To summarize, we observe a variation in newspaper ownership structure across cities in New Zealand. There are population centers where the paid daily and free weekly newspapers belong to the same owner (Fairfax), such as Nelson and Blenheim. There is Auckland, where the paid daily newspaper belongs to one corporation (NZME) and all other eleven overlapping free suburban newspapers belong to the rival corporate publisher (Fairfax). There are population centers with competition between the two corporate publishers in free weekly newspapers, such as Whangarei, Hamilton, Hawkes Bay, and New Plymouth.[5] There are cities with competition between Fairfax and one of the independent publishers in free weekly newspapers, such as Wellington, Christchurch, Dunedin, Queenstown, and Invercargill. Finally, in Tauranga there is competition between NZME and an independent publisher in free weekly newspapers.

The situation in New Zealand presents a unique opportunity in light of the earlier studies with endogeneity issues. Here, market penetration of all free weeklies are truly exogenous: All free weeklies are delivered for free to the mailboxes of residents within the circulation area. Readers have no purchase decisions to make. They also have no subscription plans for titles from outside their own circulation area. Thus, penetration of all free weeklies can be taken to be exogenous and 100%. Readers are passive receivers of these free titles, and they play a much diminished role in a theoretically two-sided market. In our analysis, we focus on the advertising side of the market, in particular the competition for advertisers between different titles both within the same tier and across different tiers.

We identify two distinct newspaper tiers in New Zealand: paid daily city newspapers and free weekly suburban newspapers. There are fewer tiers in New Zealand likely because its metropolitan cities have smaller populations.[6] Even the largest metropolitan area, Auckland,

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[5]When the New Zealand Commerce Commission declined the NZME-Fairfax merger application, they dedicated a substantial portion of their final determination to these geographic markets where the merging parties have an overlap in free weekly newspapers. The media release and final determination can be found here: `http://www.comcom.govt.nz/the-commission/media-centre/features/the-nzmefairfax-final-decision/`

[6]For example, population in the greater Auckland area (1.5 millions) is roughly six times smaller than that in the greater San Francisco Bay Area (8.8 million).

does not have satellite cities to speak of. Another difference, arguably more important, between the newspaper market in New Zealand and that in the U.S. or Canada, is the widespread joint ownership of titles across different tiers. This allows us to empirically compare the competitive effects within and across tiers, with and without common ownership. This is particularly relevant for the proposed NZME-Fairfax merger, which would eliminate competition both within and across tiers for many cities, due to the merging parties' heavy presence in print media.

The Australia newspaper market, while larger in size and thus have a tier structure more akin to that in the U.S. and Canada, have a high ownership concentration similar to New Zealand. Two dominant corporations, Fairfax Media and News Corp. Australia own all major metropolitan titles[7], plus a large number of regional and suburban titles. With a comprehensive reform in media laws in late 2017, the previous ownership rule (the "2 out of 3 rule") that prevents control of more than two of the three regulated forms of media (associated newspapers, commercial radio, and commercial TV) is repealed. Fairfax Media openly declares that they are ready to take advantage of merger opportunities[8]. It is often speculated that Fairfax might seek to merge with Seven West Media, which would further increase concentration in print newspapers. In addition, both countries are recently experiencing waves of closures in suburban titles, by News Corp. Australia[9], Fairfax Australia[10], and Fairfax NZ[11]. Because of their great similarity, our empirical results based on the New Zealand market has significant implication for the Australian market.

4   Data

Unlike studies based in North America, newspaper advertising rates in New Zealand are not centrally collected and available through trade publications such as the *Editor and Publisher International Yearbook*. We construct an original dataset of newspaper titles, advertising rates, and market structure in the following manner. We collect all current (effective 2017) advertising

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[7]The only exception is *The West Australian*, owned by Seven West Media.

[8]https://www.smh.com.au/business/companies/fairfax-ready-to-take-advantage-of-merger-opportunities-20180221-p4z11z.html

[9]http://www.newsmediaworks.com.au/leader-closes-seven-melbourne-community-titles/

[10]https://mumbrella.com.au/fairfax-to-shut-six-community-newspapers-11-jobs-to-go-482887

[11]https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=11998847

rates for all paid daily and free weekly newspapers. Those owned by NZME and Fairfax are publicly available online. In addition, we request and obtain rate cards from five independent publishers. Table 1 summarizes the number of titles, paid and free, by each publisher in our dataset. It shows that the two corporate publishers dominate the paid newspaper market, sharing it almost equally. However, Fairfax has more than double the number of free titles than NZME. Independent publishers make up about a quarter of all free titles. While we have included the biggest independent publishers in New Zealand, our dataset is not exhaustive, because one did not reply our inquiry on advertising rate cards.

Table 1: Title count by publisher in dataset

Publisher	Paid	Free	Total
Fairfax	9	52	61
NZME	7	21	28
Allied Press	1	11	12
Star Media	0	7	7
Wellington Suburban Newspapers (WSN)	0	3	3
Wairarapa Times-Age	1	1	2
Times Media	0	2	2
Total	18	97	115

Advertising rate cards differ in format and specification offerings across titles, and we take great care to arrive at rates for each title that are comparable across titles. First, when comparing display advertising rates between broadsheet and tabloid newspapers, we take the equivalent area. For example, we compare the full-page tabloid display advertising rate to the half-page broadsheet rate. (All free weekly newspapers are tabloid sized. All NZME paid daily newspapers are tabloid sized, while all Fairfax paid daily newspapers are broadsheet sized.) Second, we use the direct advertising rate, as opposed to the agent (commission-bearing) advertising rates, since the former is more widely available, and the use of agents is uncommon for free suburban newspapers. Third, for the minority of titles whose advertising rates are expressed in terms of column-centimeters, as opposed to page area (e.g., full page, half page, etc.), we multiply the column-centimeter rate by the equivalent number of columns and centimeters. For example, a full tabloid page is usually equivalent to 7 columns $\times$ 37cm = 259 column-centimeters. Some tabloid titles divide the page into eight columns instead of seven, and we make sure to incorporate each publisher's idiosyncracies. Fourth, for the minority of titles whose rates for display advertising do not include color, we add in the color processing rate. Among the Fairfax free weekly suburban

newspapers that we have access online, almost all pages are full-color, including both the content and display advertising. Fifth, we take the "regular" rate whenever both a "regular" and "casual" rate are listed. We take the "run of paper" rate whenever that and other "premier" rates (e.g. guaranteed front pages, or first half position) or section-specific rates are listed. Lastly, we ignore all forms of bulk discounts, such as "multi-paper buys", "annual spend discounts", and volume discounts in terms of total column-centimeters purchased.
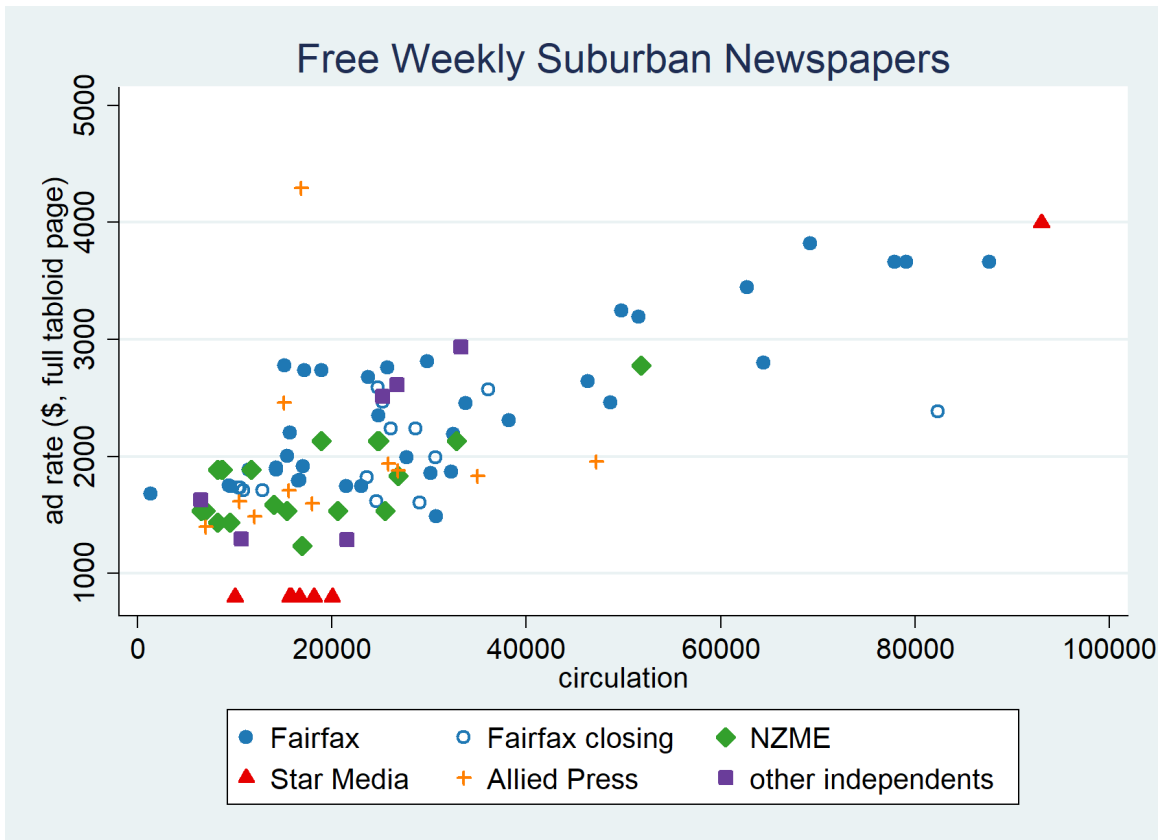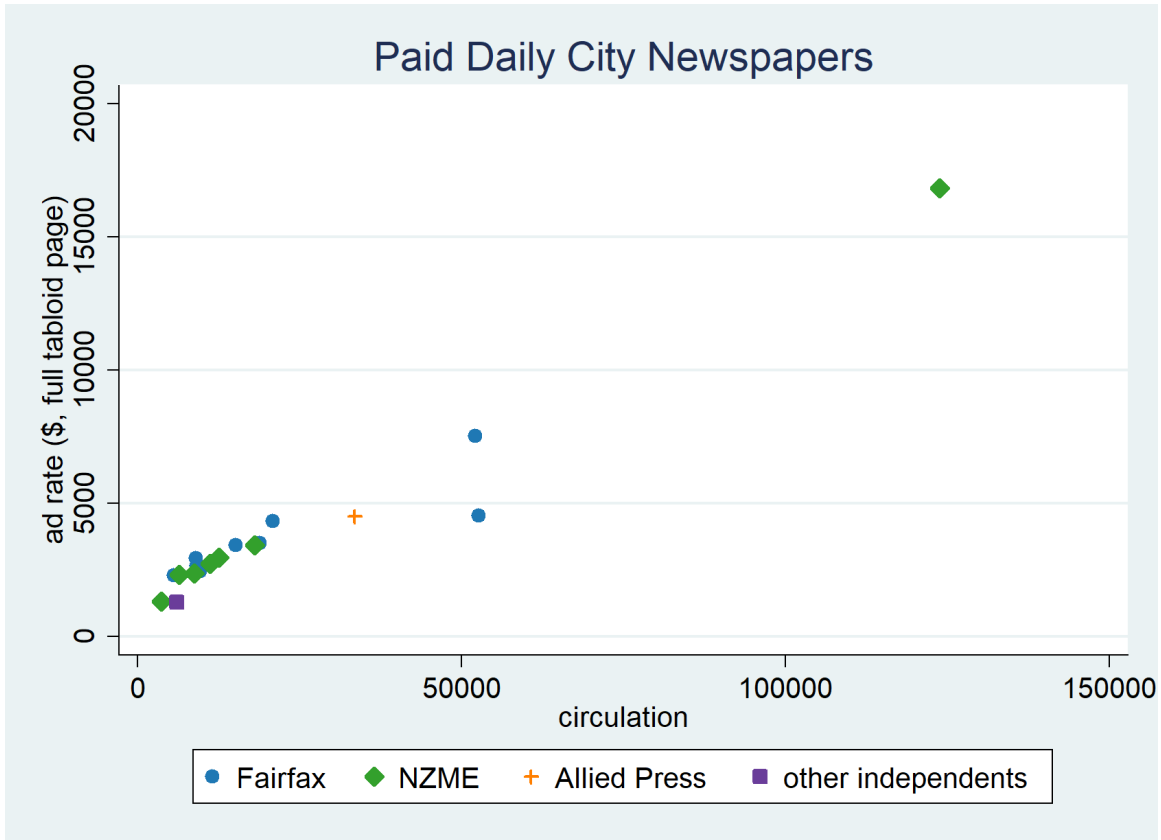
We obtained annual averaged audited circulation numbers from the New Zealand Audit Bureau of Circulations Inc. (`http://www.abc.org.nz/`) for all titles. In addition, readership data is available for NZME and Fairfax's titles from their media kits. Numbers cited by both companies come from Nielsen. Readership numbers for all free weekly suburban newspapers are expressed in terms of number of readers reached per week. For paid daily newspapers to be comparable with that of free weekly newspapers, we use the weekly (as opposed to daily) number of readers reached measure. Readership numbers are usually larger than circulation, because a single newspaper copy delivered to a household is usually read by more than one person. Because we do not have Nielsen readership numbers for all titles, we prefer the use of circulation numbers in our analysis.

We collected comparable advertising rates for the following specifications. For display advertising, we collected the printed rates for full-, half-, and quarter-tabloid page areas. For classified advertising, we collected the "per column-centimeter" rate. Figure 1 contains two scatter plots of full page display advertising rate against circulation. The first graph shows all paid daily city newspapers, and the second graph shows all free weekly suburban newspapers. In the second graph we have also identified the Fairfax titles that have closed in 2018. These graphs serve as a summary of our dataset. We note that there is no stark division in size (by circulation) between paid and free newspapers. Excluding the four biggest paid titles[12], all other paid titles have the same order of magnitude (in tens of thousands) as most free titles. This is likely a combination of the relatively small population sizes of cities in New Zealand, putting a cap on paid titles' subscription numbers, plus the high penetration rate of free titles (due to their free distribution to household mailboxes).

We observe that advertising rates have a strong linear relationship with circulation, across the full range of values, for both paid and free titles of all owners. Indeed, these two variables have

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[12]In descending order: *NZ Herald*, *The Press*, *The Dominion Post*, and *Otago Daily Times*

Figure 1: Display advertising rate for full tabloid page vs. circulation

a correlation of 0.6387. When we regress this advertising rate on circulation, we obtain a highly significant coefficient and an R^2 value of 0.4079. These results also hold true for half and quarter page display advertising rates, as well as the classified advertising rate per column-centimeter. For the subset of titles with readership data, the correlation between that and advertising rate is even higher: 0.9421. When we regress advertising rate on readership, we obtain a highly significant coefficient and an R^2 value of 0.8875.

5 Results

We use price regressions to explore whether advertising rates are correlated with variables other than readership, such as market structure. In the regressions that follow, we focus on free weekly suburban newspapers only, for the following reason. We can largely ignore consumers' purchase behavior because these newspapers are delivered free, by default, to all households within the area of distribution. We are thus able to focus on just one side of the two-sided market.[13] It is generally acknowledged that advertising brings in the majority of a title's revenue, compared with readers' subscriptions. Furthermore, it is established by a few studies (Argentesi and Filistrucchi (2007); Kaiser and Wright (2006)) that advertising demand is more price elastic than readers' demand, making the price of advertising a more important strategic variable than the price of subscription (if there is one).

We demonstrate the strong linear relationship between advertising rate and circulation in the previous section. Here we acknowledge that advertising rate is not the only endogenous variable—publishers can also strategically select a level of circulation by changing its distribution area. In fact, free newspapers can do so more easily than paid ones because the former do not rely on readers' subscription. Their primary concern is the marginal cost of printing and distribution, and the resultant change in catchment area for advertisers. This is similar to the search for the efficient scale of a firm, with the addition of the spatial element of circulation. We address the endogeneity of circulation by considering an alternative dependent variable: advertising rate divided by circulation. This also lets us explore whether each of our independent variables

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[13]We acknowledge that the free-delivery nature of weekly suburban newspapers does not eliminate its two-sided nature entirely. Theoretically, if readers have a very strong dislike for advertising, or if the quantity or quality of the newspapers' original content drop drastically, readers can discard these newspapers upon receiving them, which would result in a lower surveyed readership, making them less attractive to advertisers.

is more likely to have a simple additive relationship with advertising rate, or a relationship proportional to circulation.

We explore whether the free weekly suburban newspapers respond to the presence of own and rival titles, including independents, when setting their advertising rates. We construct dummy variables of overlap status between each free weekly newspaper with titles of its own or rival publisher, and with the two largest independent publishers (Star Media in Christchurch and Allied Press in bottom half of the South Island). We consult all available delivery maps and textual description of circulation areas when determining the values of these dummy variables. They take on the value of one whenever there is some degree of overlap: the larger area (of the paid daily newspaper) need not fully encompass the smaller area (of the free weekly newspaper). We acknowledge that dummy variables are crude measures of overlap; however, finer measures such as the number of households or businesses in the overlapping area are very difficult to produce at this stage. All publishers set distinct distribution areas for their portfolio of free weekly newspapers, thus free weeklies of the same owner have no overlap with each other.[14]

Table 2 is a set of exploratory regressions by the owners of the free weekly titles. In the first three columns, the coefficient on circulation is strongly significant, positive, and very stable in magnitude. This will continue to hold in other regression tables to follow. Columns (1) and (4) compare all the independent titles against those owned by the two corporate publishers. Column (1) suggests that the independent titles have a significantly lower advertising rate, in absolute value, even after controlling for circulation. Column (4) also shows a negative coefficient, albeit insignificant. Columns (2) and (5) compare the two corporate publishers against all independents. The indicator for Fairfax is positively significant in column (2); the indicator for NZME is so in column (5). Both of these coefficients have economic significance: In column (2), the coefficient of 307.2 is about 15% of the average advertising rate for a full tabloid page; in column (5), the coefficient of 0.0307 (or 3.07 cents per copy circulated) is about 30% of the average advertising rate per copy circulated. Lastly, columns (3) and (6) compare the individual independent publishers against the two corporate publishers. These independent publishers are arranged in descending order on the number of titles owned. Star Media (operating in the greater Christchurch area) has a negative and significant coefficient in both columns. The magnitude of its coefficients are economically significant: in both columns, they represent about

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[14]The only exception is Star Media's titles.

Table 2: Regression results: advertising rates on ownership

dependent variable:	Advertising rate			Advertising rate per circulation		
	(1)	(2)	(3)	(4)	(5)	(6)
Circulation	0.0256***	0.0245***	0.0266***			
	(0.00286)	(0.00296)	(0.00261)			
Independent	−245.7*			−0.00489		
	(124.3)			(0.0131)		
Ownership indicator variables:						
Fairfax		307.2**			−0.00493	
		(131.3)			(0.0134)	
NZME		105.2			0.0307*	
		(159.6)			(0.0166)	
Allied Press			20.31			0.0162
			(154.7)			(0.0173)
Star Media			−905.7***			−0.0543**
			(187.8)			(0.0212)
WSN			293.2			0.0435
			(280.0)			(0.0315)
Wairarapa Times-Age			−724.3			−0.0452
			(477.1)			(0.0538)
Times Media			90.22			−0.000407
			(339.9)			(0.0383)
constant	1468.0***	1248.2***	1442.3***	0.105***	0.100***	0.105***
	(101.4)	(125.2)	(92.34)	(0.00667)	(0.0110)	(0.00643)
R^2	0.499	0.510	0.604	0.00152	0.0641	0.112
N	93	93	93	93	93	93

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

half of the average advertising rate, either in absolute value or per copy circulated. No other publisher has any significance in either column.

These descriptive regressions show that there is heterogeneity in pricing behavior among independent publishers. Allied Press and Star Media are the two biggest independent publishers in New Zealand; all others listed here have three titles or fewer. Even so, there is sufficient difference between them in terms of market structure, that may partially drive the observed difference in pricing. All of Star Media's free weekly titles fall under the "umbrella" of Fairfax's paid daily in Christchurch, *The Press*. In contrast, Allied Press owns the paid daily in Dunedin (*Otago Daily Times*), dominating the newspaper industry in southern New Zealand.

Table 3 shows the regressions of advertising rate on indicator variables of market structure. All statistically significant coefficients are in the signs that we expect. For all indicator variables on various overlaps, all significant coefficients of "own" variables are positive; all significant

Table 3: Regression results: advertising rates on market structure

dependent variable:	Advertising rate			Advertising rate per circulation		
	(1)	(2)	(3)	(4)	(5)	(6)
Circulation	0.0267***	0.0267***	0.0261***			
	(0.00291)	(0.00286)	(0.00298)			
Overlap indicator variables:						
With own paid daily	107.1	136.9	129.5	0.0217	0.0244*	0.0279*
	(136.9)	(135.2)	(141.0)	(0.0141)	(0.0140)	(0.0144)
With rival paid daily	−71.92	4.221	17.35	0.00247	0.00935	0.00860
	(136.0)	(138.4)	(140.2)	(0.0141)	(0.0144)	(0.0145)
With rival free weekly		−236.9**			−0.0214*	
		(113.8)			(0.0119)	
With rival free weekly (by Fairfax)			−302.0**			−0.0115
			(134.9)			(0.0138)
With rival free weekly (by NZME)			−126.1			−0.0277
			(174.0)			(0.0180)
With rival free weekly (by Ind.)			−206.3			−0.0366**
			(176.0)			(0.0180)
constant	1355.5***	1437.2***	1450.9***	0.0901***	0.0973***	0.0955***
	(173.3)	(174.6)	(180.9)	(0.0153)	(0.0157)	(0.0159)
R^2	0.489	0.513	0.519	0.0339	0.0680	0.0897
N	93	93	93	93	93	93

* p<0.1, ** p<0.05, *** p<0.01

coefficients of "rival" variables are negative. In column (2), the magnitude of the significantly negative coefficient, on overlap with a rival free weekly, corresponds to 11% of the average full-page tabloid advertising rate of free titles, after controlling for circulation. In column (5), the magnitude of the same significantly negative coefficient corresponds to 19% of the average advertising rate per copy circulated. Thus, the downward pressure on advertising price from rival free weeklies is both economically and statistically significant.

Evidence on the competition between the two newspaper tiers is weaker. On the one hand, a rival paid daily city newspaper exerts no downward pressure on free weeklies' advertising rate. This is empirical evidence that the umbrella model of inter-tier competition between overlapping titles may not be wholly accurate in New Zealand. Thus, free weeklies do not seem to view a rival paid daily to be an important source of competition for advertising clients. On the other hand, publishers of overlapping daily and weekly newspapers do seem to take profit maximization into consideration: free weeklies with an overlapping paid daily have statistically significantly higher advertising rates per circulation than those without. We note that the positive significance occurs only when the dependent variable, advertising rate, is divided by circulation (columns

4-6), not when it is expressed in raw form (columns 1-3). This means that the effect from an overlapping paid daily of same ownership is proportional to circulation, as opposed to being a fixed, absolute value. This makes sense because the circulation numbers of paid dailies and free weeklies are often of different orders of magnitude; the same is also true between big and small paid dailies. For example, when a multi-title publisher sets rates for a free weekly with circulation 2,000, the competitive effect from a jointly owned paid daily should not have the same absolute value whether the paid daily has circulation 20,000 or 200,000. As to why a rival paid daily seems to bring no competitive effect on advertising rates, while a co-owned paid daily does, one possible reason may simply be that these are different titles and markets. Few titles overlap with two different paid dailies, one of the same ownership and another a rival. Almost 80% of our titles have overlap with either one, but not both. Because we do not have a panel data of advertising rates, we cannot separate out any title fixed effects. Another possible reason is the combination of advertiser segments and the prevalence of multi-title advertising packages. While small local businesses advertise only in the suburban weeklies (and they do take up the majority of the advertising page area), national businesses advertise in both the suburban weeklies and city dailies. Thus, a free weekly that does not have a co-owned paid daily does *not* view the rival paid daily as the primary competitor for advertising clients. However, a national business with local franchises is very likely to take advantage of multi-title advertising packages. Although the advertising prices in our dataset do not reflect these multi-title discounts, it is reasonable to speculate that "single-title" prices are raised to incentivize bigger advertisers to purchase multiple overlapping titles.

Column (5) shows that the positive effect in advertising rate per circulation associated with co-owning a paid daily has roughly the same magnitude as the negative effect associated with the presence of a rival free weekly. Both effects are roughly two cents per copy circulated, for a full-page tabloid sized ad. This is an economically significant effect: it is about 20% of the average advertising rate per circulation for all free weeklies, which is about ten cents per circulation. This may suggest that, if NZME and Fairfax were allowed to merge, in geographic markets were this creates a joint ownership between the paid daily and free weekly, the introduction of a rival free weekly (either through divestiture or entry) could neutralize the price effect from joint ownership.

Do all rival free weeklies have the same competitive pressure on advertising price? Columns

Table 4: Regression results: merger decision and recent development

dependent variable:	Advertising rate		Advertising rate per circulation	
	(1)	(2)	(3)	(4)
Circulation	0.0238***	0.0216***		
	(0.00237)	(0.00277)		
Overlap: Fairfax-NZME free weekly	−181.6*		−0.00748	
	(97.17)		(0.0135)	
Closing		−271.8**		0.0100
		(123.9)		(0.0135)
constant	1578.9***	1727.9***	0.108***	0.0923***
	(89.24)	(115.7)	(0.00779)	(0.00742)
R^2	0.626	0.614	0.00458	0.0113
N	69	50	69	50

* p<0.1, ** p<0.05, *** p<0.01

(3) and (6) further breaks down the rival free weeklies by owners: Fairfax, NZME, and all independent publishers. They all have negative signs, although not all coefficients are significant. Column (3) suggests that Fairfax exerts the strongest competitive pressure, in absolute dollar value; while column (6) suggests that the independent publishers exert the strongest pressure, per circulation.

Table 4 explores the particular NZME and Fairfax titles identified by the Commerce Commission's final determination. In Table 3 (page 89), the document lists thirteen geographic markets where both merging parties own a free weekly title. In columns (1) and (3), we limit our observations to titles belong to NZME and Fairfax only (thus N falls from 93 to 69), and explore whether this overlap creates a downward pressure on price, similar to that seen in table 3, relative to other NZME / Fairfax titles. Column (1) shows a significantly negative coefficient, while column (3) does not. Thus, there is some evidence that the competition between the two merging parties drives advertising prices down in overlapping markets.

Although the proposed merger is declined, the market of free weeklies does not remain static. Fairfax announces the sale or closure of 28 suburban titles in early 2018. By May, it confirms the closure of fifteen titles due to the lack of interested buyers. In columns (2) and (4), we limit our observations to Fairfax titles only (thus N falls to 50), and explore whether these closing titles are any different from surviving ones. Column (2) shows a significantly negative coefficient, while column (4) does not. Thus, there is some evidence that Fairfax's closing titles draw less advertising revenue per page area than its surviving ones. Among the fifteen closing titles,

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four of them are among the overlapping titles identified by the Commerce Commission. These geographic markets are losing competition among free weeklies in the absence of the merger.

5.1 Discussion

The umbrella model of newspaper competition, based on market structures observed in large metropolitan areas such as San Francisco and New York, emphasizes competition (for both readers and advertisers) across different tiers in localized geographic markets. The model is inspired by the decades-long decline in the number of cities with multiple competing newspaper titles. Our study, focusing on the advertising side of the market only, finds that competition within the same tier is still stronger than competition across different tiers, when the former is still available. We find strong empirical evidence for competition between overlapping free weekly titles: it is associated with 11% decrease in display advertising rate, after controlling for circulation, or 19% decrease in advertising rate per copy circulated. In contrast, we find weaker and mixed evidence on competition between the two tiers. While joint ownership of an overlapping paid daily is correlated with a significantly higher advertising rate, overlap with a rival paid daily is not correlated with any significant difference in advertising rate. Thus, free weeklies do not seem to view a rival paid daily to be an important source of competition for advertising clients. Our result shows that the New Zealand multi-tier newspaper market does not have the same pattern of competition as suggested by the umbrella model.

Our results give supporting evidence for the Commerce Commission's decision to decline the proposed NZME-Fairfax merger. A significant portion of their final decision concerns the loss in competition in geographic markets where NZME and Fairfax have overlapping free weekly newspapers. Our study shows that this concern is grounded in empirical evidence. In addition, this study provides an additional reason that the merger should be declined—it would render almost all existing paid daily titles to have common ownership with some of its overlapping free weeklies. For example, in the Auckland market, NZME publishes the paid daily city newspaper while Fairfax publishes eleven free weekly suburban titles. The merger would introduce a new joint ownership between these two tiers, and our analysis shows that this is associated with a 19% increase in advertising rate per copy circulated for free weeklies.

Lastly, our analysis sheds light on what might happen to geographic markets where Fairfax closes a suburban weekly title. All else equal, when competition with a rival free weekly disap-

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pears, advertising rate is likely to increase. Among the fifteen titles that Fairfax is confirmed to close, four overlap with NZME free weekly titles; five overlap with Allied Press titles; two overlap with Star Media titles; and one overlaps with Wairarapa Times-Age. Only three are local monopolies before closure. Fairfax is likely to divest other suburban titles by selling to incumbent media companies. New Zealand is thus experiencing the same trend of newspaper closures and ownership consolidation as seen in North America. An additional obstacle to newspaper competition in New Zealand is the small number of incumbent media companies, which greatly diminishes the remedial effect of divestitures.

6   Conclusion

In this paper we investigate the competition for print newspaper advertising in New Zealand. We focus on free weekly suburban titles, whose revenue come solely from advertising. Because they are distributed to household mailboxes, we can largely ignore readers' decisions in an otherwise canonical two-sided market. We construct an original dataset of advertising rates, circulation, and market structure variables. Through our regressions on display advertising rates, we find strong evidence for competition between free weekly suburban titles with overlapping areas of distribution. Specifically, the presence of a rival free weekly in one's geographic market is associated with a 11% decrease in the display advertising rate. We find weaker evidence for competition between free weekly suburban newspapers and paid daily city newspapers. Our result supports the Commerce Commission's reject rejection of the proposed NZME-Fairfax merger, and sheds light on the potential outcomes in markets where Fairfax is closing titles. In addition, our result shows that the umbrella model of newspaper competition, which emphasizes competition between different tiers, is not always prevalent, despite the presence of multiple newspaper titles.

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