Price-Fixing Allegations in the Canned Tuna Industry: A Look at the Data*

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Abstract

In December of 2014, Thai Union, the parent company of Chicken of the Sea canned tuna announced that it had reached an agreement to acquire Bumble Bee tuna from Lion Capital. In the course of standard merger review, the Department of Justice subpoenaed the merging parties as well as the parent company of StarKist in order to investigate possible collusion among the major producers of canned tuna. This led to several class action lawsuits and a criminal conviction for price fixing. This paper describes how these firms were alleged to have colluded and uses retail scanner data to document how prices and promotional activity changed while the cartel was in operation. Avenues for future research are discussed.

Keywords: canned tuna; alleged cartel; price-fixing; price promotions

*Researchers own analyses calculated (or derived) based in part on data from Nielsen Consumer LLC and marketing databases provided through the NielsenIQ Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the NielsenIQ data are those of the researcher(s) and do not reflect the views of Nielsen. Nielsen is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.

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1 Introduction

In December of 2015, two of the three main producers of canned tuna in the United States abandoned their proposed merger.[1] Thai Union's and Bumble Bee's decision to terminate the merger agreement was not simply due to concerns raised by the Department of Justice (DOJ) about potentially anti-competitive effects of the transaction. Rather, during its standard merger review, the DOJ discovered a cartel dating back at least four years. Ensuing litigation featured guilty pleas from Bumble Bee, StarKist, and a number of individual employees. Thai Union may have received Type B leniency from the DOJ. One executive plead not guilty, was convicted, and sentenced to prison. Private litigation pitting the producers of canned tuna against an assortment of wholesalers and retailers is ongoing.

As strange as it may seem for two cartel members to propose a merger and hand over a trove of incriminating evidence to the DOJ on their own accord, it is only one event in a series of distinctive actions undertaken by firms in the cartel. In this article, we detail the allegations made against the tuna producers, which we glean from publicly-available complaints filed by private litigants. Among the allegations are that the producers coordinated list price increases and can size reductions, and that they agreed to limit price promotions. We then examine scanner data on the prices paid by U.S. consumers for canned tuna over 2006-2016, which more than spans the time period over which Bumble Bee and StarKist admitted to fixing prices. We hope to provide information that guides future research efforts into this curious episode.

We structure the article as follows. Section 2 provides institutional details on the market. Section 3 summarizes the course of litigation and draws from the various complaints to describe allegations against the canned tuna providers. Section 4 provides the empirical analysis. We conclude in Section 5 by sketching some directions for future research.

[1] https://www.justice.gov/opa/pr/chicken-sea-and-bumble-bee-abandon-tuna-merger-after-justice-department-expresses-serious.

2 Industry Background and Market Structure

Canned tuna has long been a pantry staple in U.S. households. It is relatively less expensive than many other proteins, and as a shelf-stable product it is easily stored. Consumption grew steadily through much of the last century and peaked in 1989 when, according to USDA data, per-capita consumption was 3.9 pounds per year. Since that time, per-capita consumption has declined gradually and was approximately 2.1 pounds in 2018.

The canned tuna that is sold in retail outlets in the U.S. can be conceptualized as a branded differentiated product. The most popular brands are Bumble Bee, Chicken of the Sea ("CoS"), and StarKist. Under the umbrella of these brands, consumers can choose between Albacore tuna and Skipjack tuna, with the former providing lighter, more solid meat. Both types of tuna are canned in water or oil, and the size of the can is either three ounces, five or six ounces, or twelve ounces.

Table 1 lists the share of revenue accounted for by different brands of tuna, as well as the Hefindahl-Hirschman Index (HHI), based on a sample of grocery stores over 2006-2016.[2] The three main brands account for about 80% of revenue, and this is steady through the sample period. The remaining canned tuna was largely sold by retailers under private label brands. Our understanding is that much of the private label tuna was supplied by one of the three main firms.

One stylized fact of the industry is that temporary price reductions—"promotions" or "sales"—are frequent. Figure 1 illustrates this pricing pattern using data from one product and store over 2010-2012. Each dot is the average price paid by consumers in a given week. We infer promotions as occurring when the price drops below that of the adjacent week. Weeks with a promotion feature blue dots; other weeks feature red dots. Recent research in another packaged retail consumer product market suggests that brand

[2]The underlying data for Table 1, as well as other empirical components of the article, is from Nielsen's Retail Scanner Data and is available through Kilts Center for Marketing at University of Chicago's Booth School of Business.

manufacturers exercise a good amount of control over the timing of sales, whereas the magnitude of price reduction also depends on the retailer (Mansley (2022)). The same research empirically demonstrates that intertemporal price discrimination is likely to motivate these temporary price cuts. That is, price-sensitive consumers may be willing to delay purchases until a promotion occurs, and thereby benefit from lower prices, whereas price-insensitive consumers may be more likely to purchase at a higher price.

3 Allegations and Findings of Collusion

3.1 The DOJ Case

On December 19, 2014, Thai Union, the owner of Chicken of the Sea, announced an agreement to purchase Bumble Bee Seafoods. Just under a year later, on December 3, 2015, Thai Union informed the DOJ that it planned to abandon the proposed transaction. In the subsequent years, the DOJ filed criminal charges against the companies as well as individual employees. In May 2017, Bumble Bee plead guilty and agreed to pay a $25 million fine. In the case filing, Bumble Bee admitted to entering into and engaging in a "conspiracy to fix, raise, and maintain the prices of packaged seafood in the United States," and the cartel began "at least as early as the first quarter of 2011 and continuing until at least as late as the fourth quarter of 2013."[3]In November 2018, StarKist entered into a plea agreement with DOJ. StarKist admitted to a price-fixing conspiracy from November, 2011 through December, 2013 and agreed to pay a $100 million fine.[4]

To date, Thai Union, the owner of Chicken of the Sea has not been charged as a co-conspirator. Public documents indicate that this may be because Thai Union received Type B leniency from the DOJ.[5]A company is eligible for Type B leniency if (1) it is the

[3] https://www.justice.gov/opa/pr/bumble-bee-agrees-plead-guilty-price-fixing.
[4] https://www.justice.gov/opa/pr/starkist-co-agrees-plead-guilty-price-fixing.
[5] https://www.thaiunion.com/en/newsroom/press-release/523/statement-from-thai-union.

first firm to cooperate with DOJ after the government has discovered a cartel, and (2) the government already has enough evidence to convict the cartel members.

In addition to the plea agreements with the companies, the DOJ pursued criminal charges against individual employees who implemented the price-fixing scheme. Five top executives at Bumble Bee and StarKist reached plea agreements that required cooperation with the government. Bumble Bee's CEO, Christopher Lischewski, instead plead not guilty to criminal price fixing. Former employees testified that Lischewski encouraged them to enact a "truce" with the other tuna producers, and that he ordered his employees to fix prices with their equivalents at Chicken of the Sea and StarKist.[6] A jury found Lischewski guilty. He was sentenced to 40 months in prison and ordered to pay a $100,000 fine.[7]

3.2 The Civil Lawsuits

After the DOJ's criminal investigation became publicly known, a number of firms filed lawsuits. Separate class action lawsuits were filed on behalf of wholesalers and retailers. Large customers, such as Walmart and Target, opted out of the class and filed individual suits (Garcia (2020)). Some of the lawsuits settled out of court and others are ongoing. Because the DOJ's criminal cases against the suppliers were settled out of court, few details about the inner-workings of the cartel were made public. On the contrary, many of the complaints filed by private litigants are publicly available. These documents allege a conspiracy much wider in scope than what was admitted to in the plea agreements with the government. Most of the complaints allege a conspiracy to raise prices that started as early as 2004 and lasted until 2015. The complaints also allege a number of attempts to

[6] Answering Brief for the United States, *United States v. Christopher D. Lischewski*, No. 3:18-cr-00203, (N.D. Cal filed Dec. 20, 2020).

[7] `https://www.justice.gov/opa/pr/former-bumble-bee-ceo-sentenced-prison-fixing-prices-canned-tuna`

increase the price of canned tuna, using a variety of different methods.[8]

We enumerate a selection of the allegations here:

1. The complaint of the Associated Wholesale Grocers alleges the three producers of canned tuna coordinated list price increases in the years 2010, 2011, and 2012.[9] Our understanding is that, in this industry, the list price refers to the per-unit price that retailers pay to the brand manufacturer.

2. Plaintiffs in multiple lawsuits allege that the tuna producers coordinated on a can size decrease that effectively raised the price-per-ounce of canned tuna.[10] Using retail scanner data, we document below that a can size decrease did indeed occur in 2008, as six ounce cans were replaced with five ounce cans.

3. The same complaint alleges that the tuna producers agreed to limit promotional activity from November, 2011 through June, 2013.[11]

4. The complaints also allege that tuna producers agreed not to sell FAD-free products. For context, most commercial tuna fishing uses a "Fish Aggregating Device" (FAD), which helps to attract schools of tuna but may increase the risk of catching other sea life. FAD-free fishing is more costly, but can be attractive to consumers that value environmentally-friendly products. Allegedly, the tuna producers were concerned that if one firm offered an FAD-free brand then the others would have to respond in kind.[12] By allegedly agreeing to not offer an FAD-free branded product, the producers would avoid implementing more costly production methods.

[8]For example, see, Complaint with Jury Demand, *Wal-Mart Stores, Inc v. Bumble Bee Food, Inc., Del Monte Foods Company, Tri-Union Seafoods LLC, and StarKist Company*, No. 16-5312 TLB, (Western District of Arkansas, Fayetville, filed Oct. 31, 2016).

[9]Third Amended Complaint, *Associated Wholesale Grocers, Inc.*, No. 15-md-2670-JLS-MDD, (S.D. Cal filed Mar. 8, 2021).

[10]See, for example, Amended Complaint and Demand for Jury Trial, *Consolidated Direct Purchaser Class Complaint*, No. 3:15-md-02670-JLS-MDD (S.D. Cal. May 23, 2016).

[11]*Ibid.*

[12]*Ibid.*

4 Empirical Analysis

In this section, we analyze prices in the canned tuna industry over 2006-2016. We use Nielsen's Retail Scanner Data to do so.[13] The data contains weekly revenue, volume, and product descriptions by UPC code and store. We limit the analysis to five and six ounce cans of tuna, which comprise 80% of revenue during the sample period. We restrict the sample to the 2000 largest stores by sales, drop any store that did not sell Bumble Bee, StarKist, and Chicken of the Sea products in each year, and exclusively focus on Skipjack tuna. We compute price per-unit as the ratio of revenue to volume. We first examine average prices over the sample period and then examine the amount of promotional activity.

4.1 Price Increases

We first study how prices changed for each of the three cartel participants over the course of the data. Figure 2 plots average per-can prices by month measured in nominal dollars. The vertical lines in the figures indicate the dates when the cartel members were alleged to have undertaken coordinated action. The first line denotes when the firms began replacing six ounce cans of tuna with five ounce cans. The next two lines denote the time when the tuna producers are alleged to have increased the list price of five ounce cans. The last line marks the date that Chicken of the Sea and Bumble Bee abandoned their proposed merger due to the discovery of the cartel.

The figure shows an increase in the average price per-can of tuna for each of the three largest brands in late 2008, around the time of the can size decrease. This demonstrates that the can-size decrease was likely not only an attempt to obfuscate a per-ounce price increase. The quality decrease of the most popular sized can was also accompanied by an increase in the average transacted price.

[13] The data are available through the Kilts Center for Marketing at the University of Chicago's Booth School of Business.

However, this price increase appears not to have been sustained; by the second half of 2009, prices on a per-can basis returned to roughly 2007 levels. The figure also shows an increase in price over 2011 and 2012, corresponding to the timing of the alleged list price increases. Once again, this price increase appears not to have been sustained; prices began to fall towards the end of 2013, and did not substantially rise again. It is interesting to note that in 2012 and 2013, in the wake of the list price increases, Chicken of the Sea appears to not have raised its prices by as much as Bumblebee or StarKist. Recall that Chicken of the Sea's owner, Thai Union, has not been charged with price fixing to date.

Analyzing prices on a per-can basis gives the impression that these firms did not sustain elevated prices. However, examining prices on a *per-ounce* basis paints a different picture. Figure 3 depicts per-ounce prices. Once again, prices increase around the time of the reduction in can size, peak in late 2008, and then begin to fall. However, prices on a per-ounce basis never return all the way to their 2007 levels. Even in 2016, after the discovery of the cartel, per-ounce prices are elevated relative to 2006 and 2007. In total, although the firms did not sustain a per-can price increase, they did increase per-ounce prices due to the can size reduction.

4.2 Promotional Activity

As we have already described, store level prices tend to have a high, "every day" price and a less-frequently occurring, lower price when on sale. We define a product as being on sale if it undergoes a price drop of at least 10% that lasts no more than five weeks.

Figures 4, 5, and 6 show the average price excluding sales (non-sale price), average price during sales (sale price), and the average discount during sales as a percentage of the regular non-sale price (sale depth). Each of these plots uses a moving average for a six-month window rather than the simple monthly averages shown in previous plots.[14]

[14]This is necessary because not all retailers hold a sale on every product in every month. A simple monthly

Figure 4 shows that per-ounce, non-sale prices increased sharply in late 2008, just after the decrease in can size, but then drifted downward over 2009 and 2010. Despite trending downward over this two year period, non-sale prices of Skipjack never returned to 2007 levels. The non-sale prices then increased again in 2011 and 2012 before beginning to drift downward towards the end of 2013. Chicken of the Sea, however, seems to not follow the other tuna suppliers in raising the non-sale price in 2012.

Figure 5 shows similar trends in the sale prices, but with two notable differences. First, sale prices in 2010 came closer to returning to their 2007 levels than did non-sale prices. Second, the sale prices for Chicken of the Sea and Bumble Bee fell much more rapidly in early 2014 than did their corresponding non-sale prices.

Figure 6 depicts percentage difference between the sale and non-sale price, which we denote as the sale depth. The figure shows that all three firms decreased their sale depth around the time of the can size decrease, and then again in conjunction with the list price increases. In both cases, the reduction in sale depth was not sustained, and the average sale depths returned to pre-collusive levels.

Lastly, Figure 7 shows the average number of sale weeks per year in each store for over the period of study. Each point in these graphs shows the number of sale weeks in the twelve month period surrounding the point. The figure shows that from 2006 to 2008 Bumble Bee and Chicken of the Sea may have reduced the number of sales to match the level being used by StarKist. The number of sale weeks per year reached a minimum at the time of the can size reduction, but then grew steadily until the merger was announced.

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average would show high month-to-month variation due to changes in which retailers are being included. This is one of the reasons that prices Figures 2 and 3 exhibit so much month-to-month variation.

5 Conclusion

The episode of alleged collusion in the canned tuna industry raises a number of questions that could be the focus of research going forward, especially in light of the pricing patterns that we have described in this article. For example, one striking feature of prices over the relevant period is that—aside from the can-size reduction—any alleged coordination on list prices does not appear to have been sustained. Why might it have been the case that (implicit) price increases due to the can size reduction were durable where (explicit) price increases due to price coordination were not?

Slightly restated, what about the canned tuna industry made list price increases difficult to sustain over time? The data indicate stability in the firms' market shares, a high industry concentration, and a lack of meaningful entry. Taken together, those factors suggest the possibility of successful price coordination. Based on our understanding of the industry, we raise the possibility that the presence of price promotions—and a related lack of visibility that each canned tuna supplier had into the relationships between its competitors and their downstream partners—may have made it difficult to detect deviations from coordinated outcomes. This raises yet another, somewhat broader questions: how should firms navigate a trade-off between coordination and price discrimination?

There are also interesting connections between collusion and mergers that could be developed. In a press release, the DOJ stated, "Our investigation convinced us—and the parties knew or should have known from the get go—that the market is not functioning competitively today, and further consolidation would only make things worse."[15] Implicit is an acknowledgment that mergers can have anti-competitive effects even if they occur in markets that exhibit collusion. Research that develops micro-foundations for the case of canned tuna could contribute to a recent literature that explores how mergers change

[15] `https://www.justice.gov/opa/pr/chicken-sea-and-bumble-bee-abandon-tuna-merger-after-justice-department-expresses-serious.`

market outcomes when firms are colluding and develops modeling techniques for possible use in merger review (e.g., Miller and Weinberg (2017), Igami and Sugaya (2021), Miller et al. (2021)).

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Table 1: Revenue Shares and HHI

Year	Bumble Bee	CoS	StarKist	Private Label	HHI	Total Revenue
2006	0.38	0.16	0.33	0.13	2955	318.9
2007	0.40	0.19	0.28	0.13	2897	337.4
2008	0.39	0.20	0.27	0.15	2809	356.9
2009	0.34	0.22	0.28	0.16	2688	388.4
2010	0.35	0.20	0.28	0.17	2711	392.1
2011	0.32	0.20	0.30	0.18	2644	391.1
2012	0.32	0.21	0.28	0.20	2601	387.4
2013	0.32	0.22	0.27	0.19	2593	382.3
2014	0.31	0.24	0.28	0.18	2590	374.5
2015	0.32	0.22	0.29	0.17	2632	355.4
2016	0.32	0.20	0.30	0.18	2646	329.7

Notes: "CoS" stands for Chicken of the Sea. Sales for non-Big 3 and private label are included when calculating market shares. These fringe brands, however, are assumed to have zero share when calculating HHI. Total Revenue is adjusted for inflation and measured in the millions of dollars.

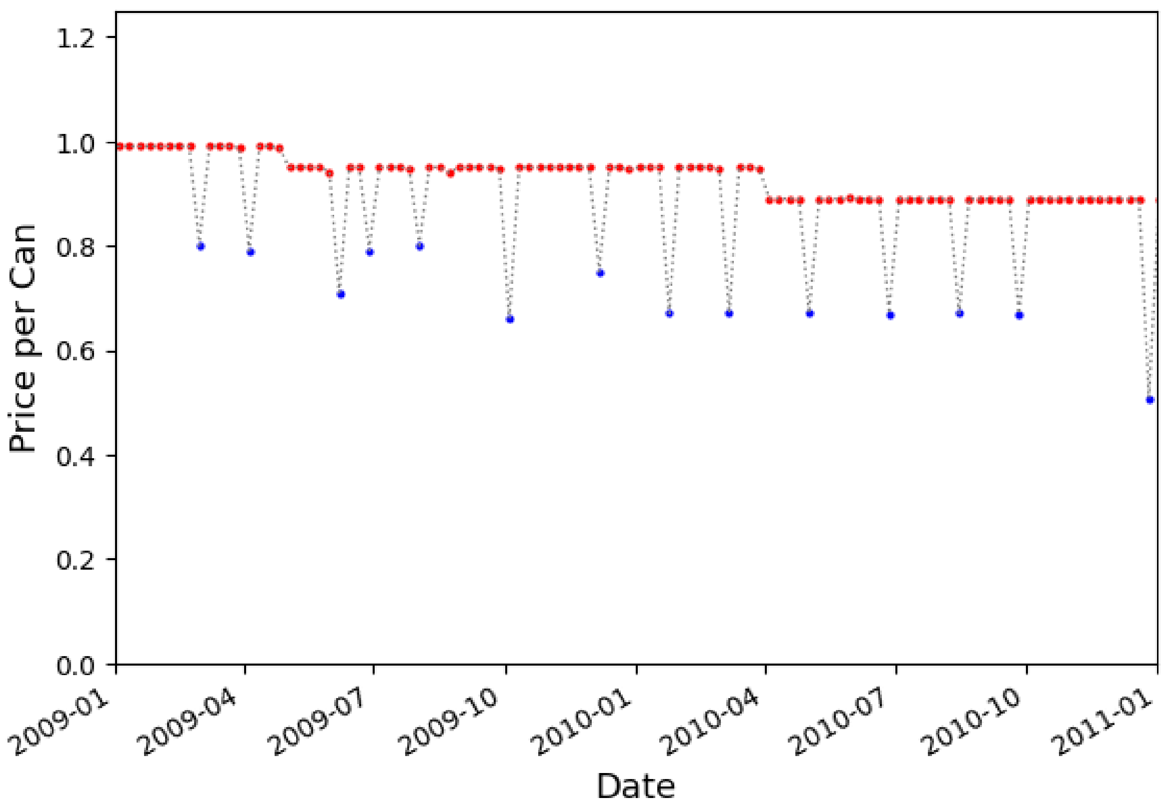

Figure 1: An Example of Price Promotions

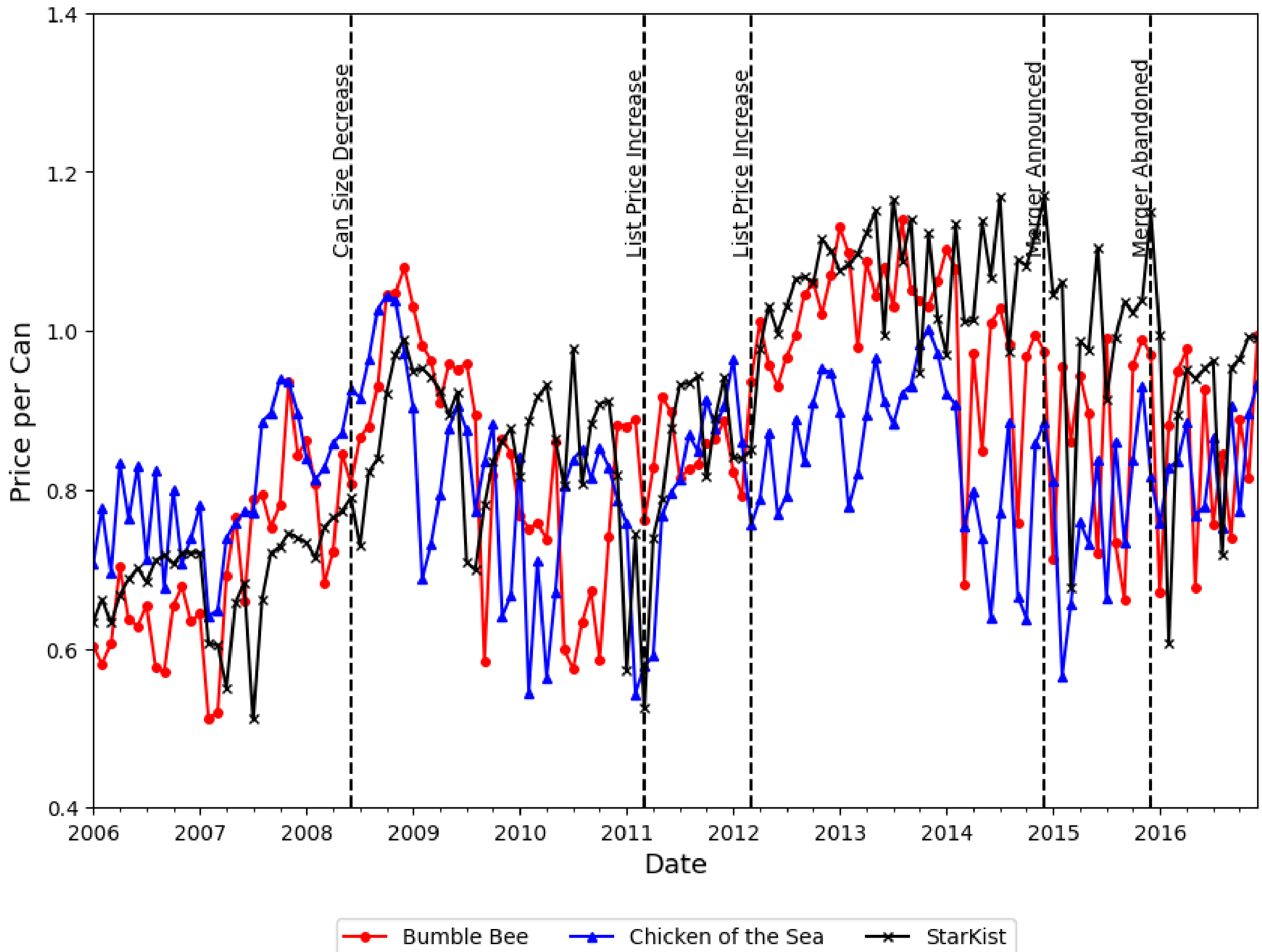

Figure 2: Skipjack Price per Can

Notes: Prices are the monthly, sales-weighted average price for each brand's top chunk light (skipjack) 5 or 6 oz. UPC. "Can Size Decrease" is when branded suppliers implemented the switch to 5 oz. cans. "List Price Increase" lines denote the two dates on which the branded suppliers are alleged to have increased list prices. "Merger Announced" is when Bumble Bee and Chicken of the Sea agreed to merge.

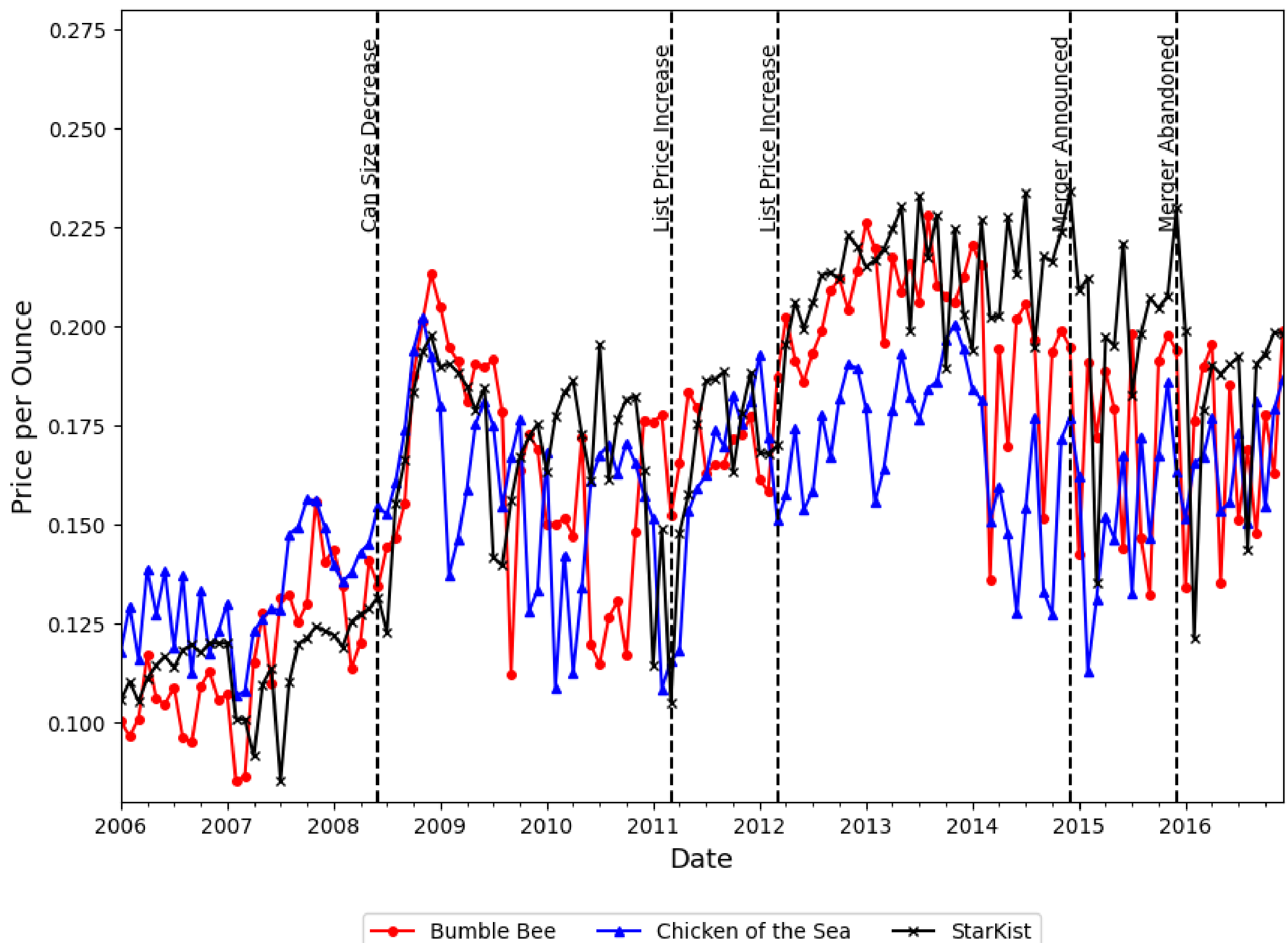

Figure 3: Skipjack Price per Ounce

Notes: Prices are the monthly, sales-weighted average price for each brand's top chunk light (skipjack) 5 or 6 oz. UPC. "Can Size Decrease" is when branded suppliers implemented the switch to 5 oz. cans. "List Price Increase" lines denote the two dates on which the branded suppliers are alleged to have increased list prices. "Merger Announced" is when Bumble Bee and Chicken of the Sea agreed to merge.

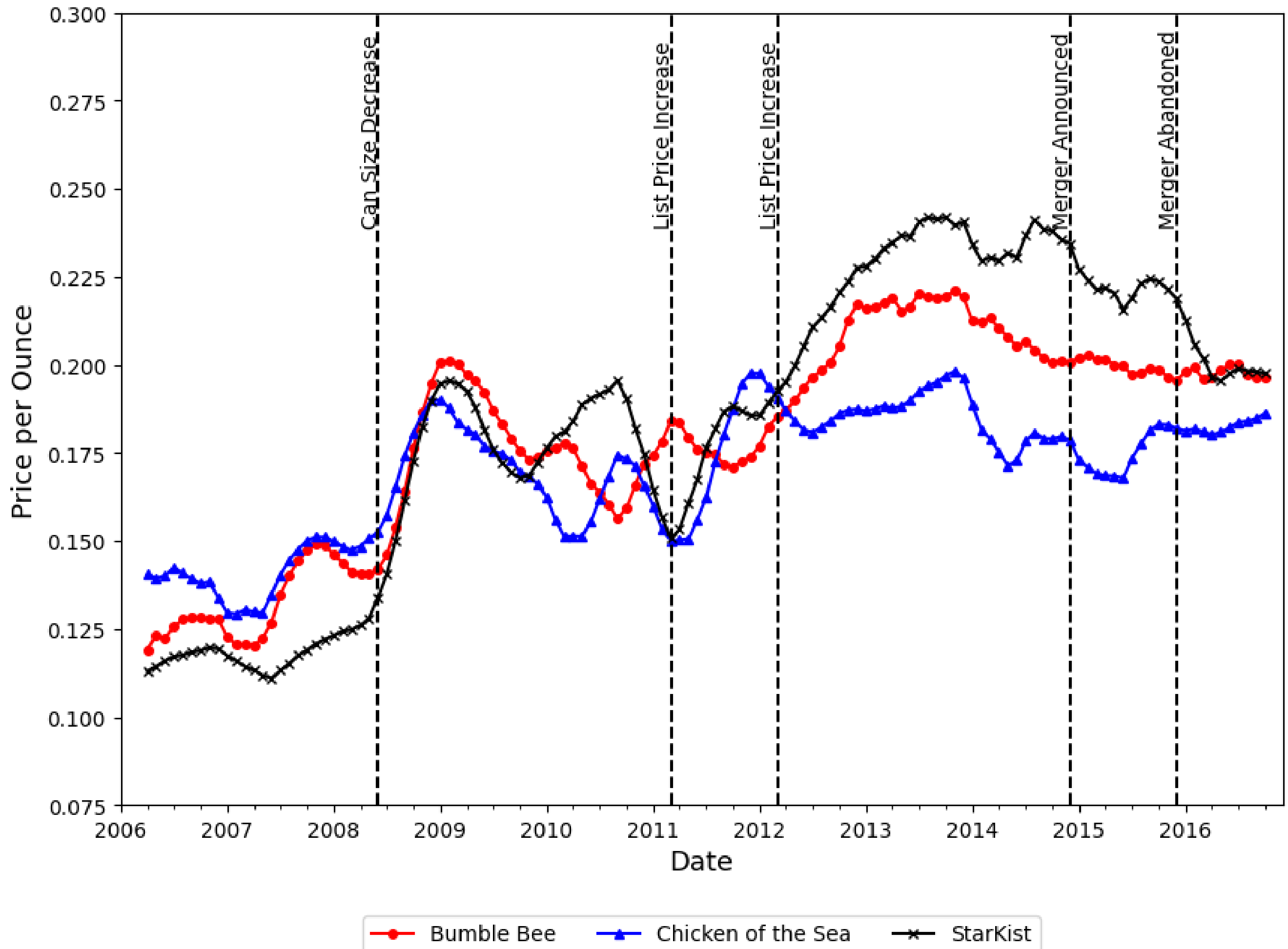

Figure 4: Skipjack Non-Sale Price per Ounce

Notes: Prices are a moving average with a six month window that exclude sale weeks. "Can Size Decrease" is when branded suppliers implemented the switch to 5 oz. cans. "List Price Increase" lines denote the two dates on which the branded suppliers are alleged to have increased list prices. "Merger Announced" is when Bumble Bee and Chicken of the Sea agreed to merge.

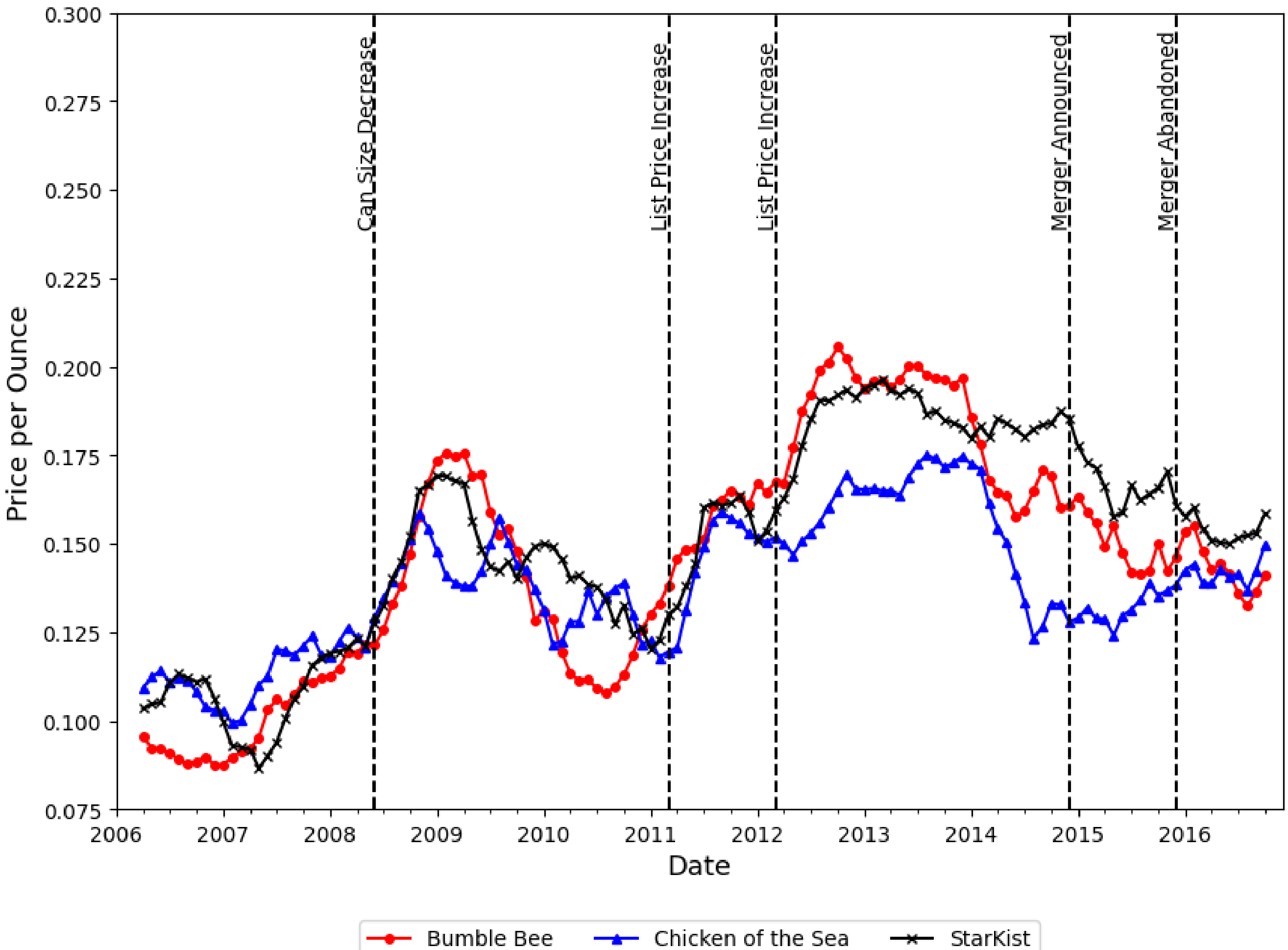

Figure 5: Skipjack Six Month Moving Average Sale Price per Ounce

Notes: Prices are a moving average with a six month window and only includes sale weeks. "Can Size Decrease" is when branded suppliers implemented the switch to 5 oz. cans. "List Price Increase" lines denote the two dates on which the branded suppliers are alleged to have increased list prices. "Merger Announced" is when Bumble Bee and Chicken of the Sea agreed to merge.

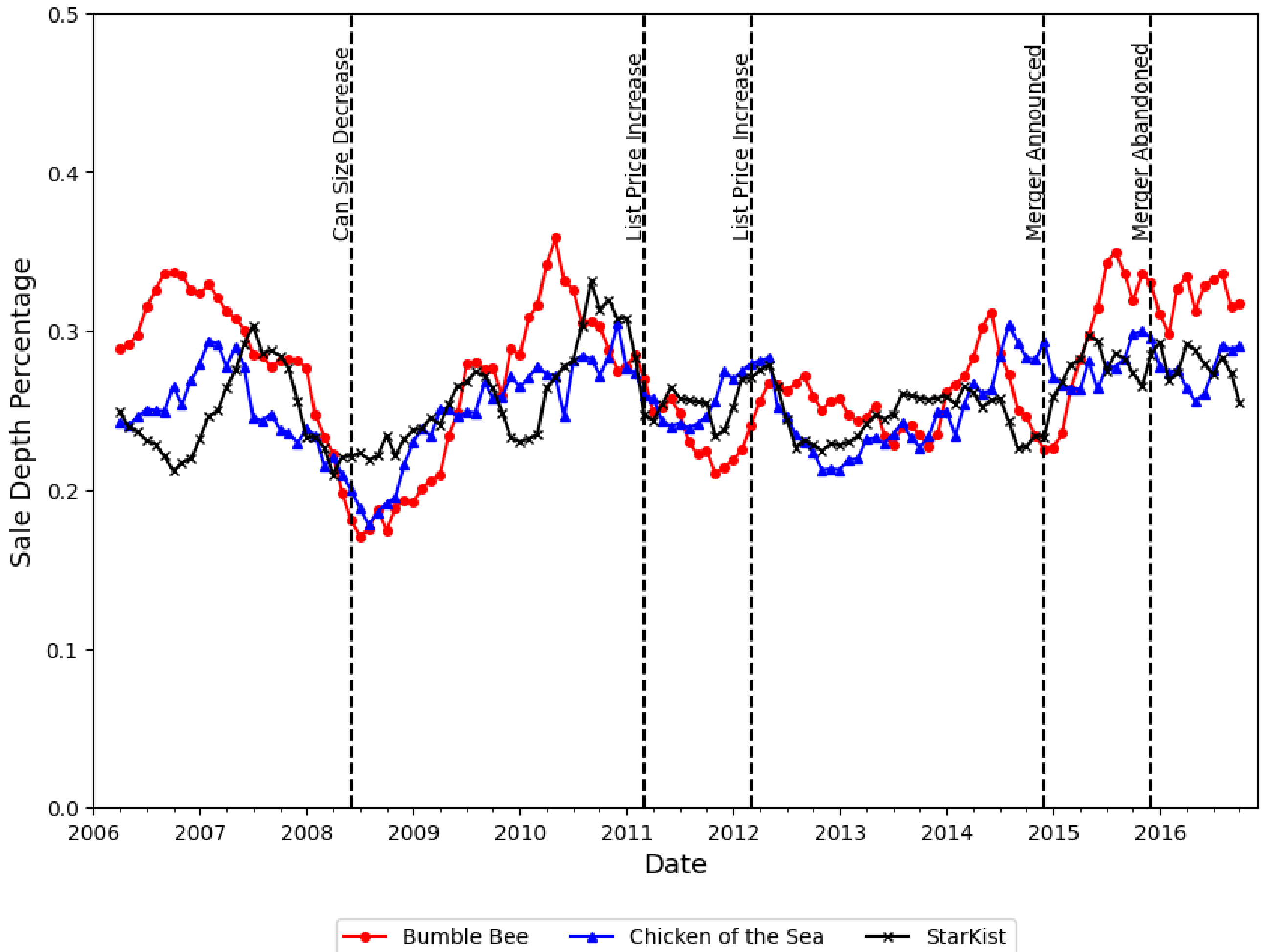

Figure 6: Skipjack Six Month Moving Average Sale Depth

Notes: Sale depth is a moving average with a six month window and is expressed as a percentage of the regular non-sale price. “Can Size Decrease” is when branded suppliers implemented the switch to 5 oz. cans. “List Price Increase” lines denote the two dates on which the branded suppliers are alleged to have increased list prices. “Merger Announced” is when Bumble Bee and Chicken of the Sea agreed to merge.

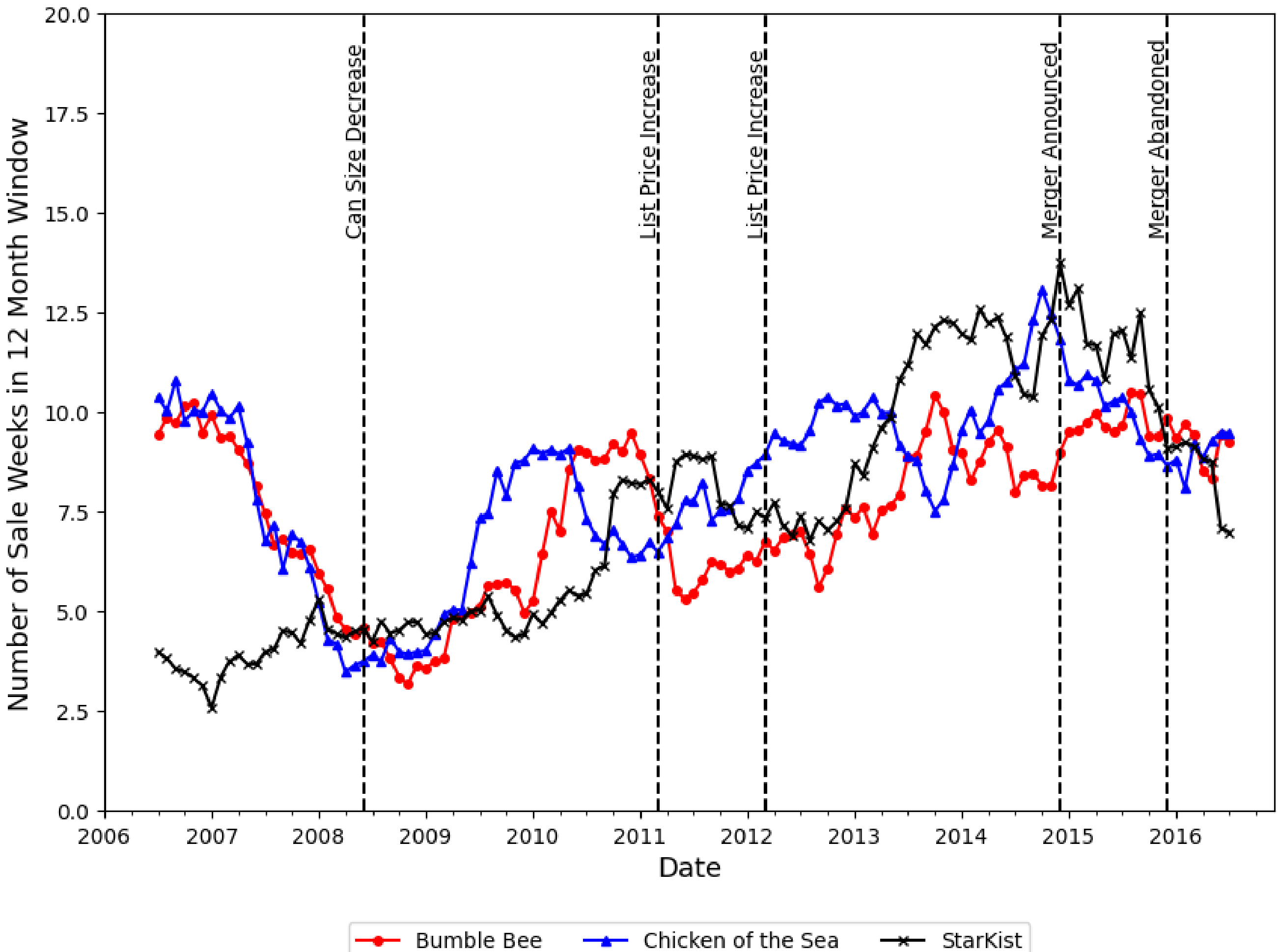

Figure 7: Skipjack Sales per Year Moving Window

Notes: Each point shows the number of sales in a 12 month window centered on the point. "Can Size Decrease" is when branded suppliers implemented the switch to 5 oz. cans. "List Price Increase" lines denote the two dates on which the branded suppliers are alleged to have increased list prices. "Merger Announced" is when Bumble Bee and Chicken of the Sea agreed to merge.